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Before the Committee on Appropriations

Energy and Water, and Related Agencies Appropriations

Fiscal Year 2007

109*th* CONGRESS, SECOND SESSION

H.R. 5427

PART 5

DEPARTMENT OF DEFENSE—CIVIL
DEPARTMENT OF ENERGY
DEPARTMENT OF THE INTERIOR
NONDEPARTMENTAL WITNESSES

Energy and Water, and Related Agencies Appropriations, 2007 (H.R. 5427)—Part 5

S. HRG. 109–295, PT. 5

ENERGY AND WATER, AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 2007

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

UNITED STATES SENATE

ONE HUNDRED NINTH CONGRESS

SECOND SESSION

ON

H.R. 5427

AN ACT MAKING APPROPRIATIONS FOR ENERGY AND WATER DEVELOPMENT FOR THE FISCAL YEAR ENDING SEPTEMBER 30, 2007, AND FOR OTHER PURPOSES

PART 5
Department of Defense—Civil
Department of Energy
Department of the Interior
Nondepartmental Witnesses

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CONTENTS

THURSDAY, MARCH 2, 2006

	Page
Department of Energy	1

TUESDAY, MARCH 28, 2006

Department of the Interior: Bureau of Reclamation	45

THURSDAY, MARCH 30, 2006

Department of Energy	89
Office of Science	117

WEDNESDAY, APRIL 5, 2006

Department of Defense—Civil: Department of the Army: Corps of Engineers—Civil	191

THURSDAY, APRIL 6, 2006

Department of Energy: National Nuclear Security Administration	241

NONDEPARTMENTAL WITNESSES

Department of Defense—Civil: Department of the Army: Corps of Engineers—Civil	297
Department of the Interior: Bureau of Reclamation	359
Department of Energy	394

ENERGY AND WATER, AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 2007

THURSDAY, MARCH 2, 2006

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 2:33 p.m., in room SD–124, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman) presiding.

Present: Senators Domenici, Craig, Allard, and Murray.

DEPARTMENT OF ENERGY

STATEMENT OF HON. CLAY SELL, DEPUTY SECRETARY

OPENING STATEMENT OF SENATOR PETE V. DOMENICI

Senator DOMENICI. The hearing will please come to order.

Senator Reid has indicated that I should start. He may or may not be able to come, but we're going to proceed.

Good morning to you, Mr. Secretary.

First of all, as many of you may know, Clay is returning to this subcommittee, where he served as clerk for 4 years. I'm not sure that he wanted me to brag or comment about that, but it's a reality, so we might as well say it. I'm very pleased to have you here today, and to have you where you are. I'm sure you're going to do an excellent job in this very difficult arena. And I compliment you on the subject matter that you're going to present to us today.

This one of many of the President's new programs to break America's dependence on foreign oil and build America's competitive edge. And DOE is the focal point for these initiatives.

Good afternoon, Senator Craig.

First, I commend the Secretary and the Deputy Secretary for setting forth a comprehensive global nuclear strategy that promotes nuclear nonproliferation, and the goals of that, and helps to resolve our nuclear waste issues at the same time.

In the 1970's, the United States decided to abandon its leadership on nuclear recycling and let the rest of the world pass us by. With the creation of this new global nuclear energy program, we're going to get back into the ball game.

Now, it's not so easy to play catch-up from such a far long distance behind. It means you've got a lot of hard work. It means you've got to have a big vision. It means you've got to be willing to put up some resources. And then you've got to decide that what

you're trying to do is really worth it, that it has the potential for solving some big, big problems in the future.

So, based on the current projections, global energy demand is expected to double by the year 2050. We must act now to ensure that we have a reliable energy source, without increasing air pollution and without increasing greenhouse gases.

Passage of the Energy bill last year created a new future for nuclear power in this country, and it's interesting to note that the rest of the world is aware of the same thing we are aware of. We finally changed our policy, the rest of the world has finally decided to change their modus operandi, and they are also moving rather quickly into nuclear power reactors as source of energy for their countries. And that's China and many others, Larry, as we know.

In the year 2006 Energy Outlook, the Energy Information Agency has included in its estimates, believe it or not, a growth in nuclear power as part of the domestic energy picture. Now, that's a simple statement to make. And for many, it doesn't mean much. But when the Energy Information Agency looks out there and assesses what's going on, they usually come up with some pretty objective findings. And they have made a decision, a determination that nuclear power is going to come onboard in the United States by way of nuclear power plants. With the GNEP, we began to close the cycle on nuclear waste in ways that prevent proliferation and reduce both the volume and the toxicity of waste. By recycling of spent nuclear fuel, we can reuse the uranium, which is 96 percent of the spent fuel. We can separate the most toxic radioactive material to be burned in advanced burner reactors.

By reusing the fuel and burning the transuranic material, we can reduce the amount of waste that would be placed in a Yucca Mountain by 100 times. In other words, a Yucca Mountain will hold the waste from 100 times as much nuclear power as it will today, putting the spent fuel rods in, as we would put them in under current law and current policy.

So, I am pleased that President has focused on the importance of solving the energy needs. I don't want to lose sight of the importance of implementing the Energy Policy Act, which contains many important incentives that will support the deployment of clean coal technology, advanced nuclear power plants, biomass, and other renewable projects.

Mr. Secretary, it's my pleasure to welcome you back, and then, after yielding to Senator Craig, I'd ask you to summarize your statement, and it'll be made a part of the record.

Senator Craig.

STATEMENT OF SENATOR LARRY E. CRAIG

Senator CRAIG. Well, Mr. Chairman, thank you very much. Clay, welcome before the committee.

I'm sitting here listening to you, Mr. Chairman, and saying, gee whiz, a year ago, this time, we didn't know if we were going to get an Energy bill. There were no incentives for new nuclear plants, no risk insurance, no tax credits, no loan guarantees. A year ago, there were no real plans for any new nuclear plants to be built in the United States. A lot of need, a lot of concern. The utility industry was looking, in the out years, to baseload, wanting to do nu-

clear. But today we believe there are 19 new reactors on the drawing boards of America's industries.

So, it is a phenomenal transition, Mr. Chairman, from where we were to where we are. And how we keep that going is going to be awfully important, not only for the future of our country, but literally for the future of the world. The President, with his India nuclear deal of 14 reactors, just in the last 24 hours, is a big deal. It's an important deal as it relates to proliferation and our ability to get our collective, and the world's collective, arms around spent fuels and all of that type of thing. And I applaud you, Clay, for the work you've done on GNEP, or the Global Nuclear Energy Partnership. It is a very important component in where we head as a world into resolving the waste stream issue and a concern that may exist still by some, as there is legitimacy to it, of proliferation.

As you know, I and others have worked awfully close on—and with you—on a new-generation concept beyond GNEP. And we actually legislated it into the policy. And these are policies that fit well together, and should be looked at in that context, I would hope. And I say that, because clearly the technology is there, not only for nuclear, but the President's initiative. His bold step, very early on in the administration, to link hydrogen to the ability of the nuclear industry, led me, this past week, to go downtown to NEI R&D summit and challenge them, and say, "Why don't you get outside this big new box you're in. It's an exciting box, building new reactors, building new baseload, bringing in the efficiencies of clean, non-emitting energy. At the same time, you're still thinking of it in the context of nuclear generation alone. Maybe we ought to think beyond that, to not only nuclear generation, but hydrogen production, not unlike what the folks in the coal industry are doing with Future Gen." And so, it's not that I coin a phrase, but I said, "Why don't we talk about Freedom Gen? Why don't we get this country up off its knees and start running?" You know, I was one of those—and Pete and I—the problem we've got in this committee is that we think we know so much about energy—and we, collectively, do, thanks to people like you, who used to be with us, and other great staff people—and when somebody says, "You know, this Nation could be energy independent," we all step back and say, "Whoa, whoa, whoa. I don't think we could ever get there."

I think how exciting it is for this President—and we almost got him there in the State of the Union—to challenge this country to get well beyond where it ever thought it could go. It's those kinds of challenges that really have made this country great. It is not impossible, from an electric standpoint, with coal new technology, nuclear new technology, to be independent there, that's for sure, and then to start adding other components to it. The Energy bill that we passed in July, that was signed in August, does just that. And because many of us were concerned about where we went with other world initiatives out there that related to climate change, we challenged this President. You all met the challenge. He went out and started talking about an Asia-Pacific initiative that makes an awful lot of sense and fits into the GNEP concept beautifully well.

So, there are an awful lot of exciting things happening out there. And I think this committee is—has done what oftentimes in Congress we really don't get done, we've actually created, thanks to

your leadership, Mr. Chairman, a significant and powerful new national policy that is now moving and driving. And we need to strengthen it where we can. We need to add new to it where we will. Your leadership at the Department of Energy with this Secretary will help us a great deal.

So, I'm anxious to hear your presentation as it relates to the Global Nuclear Energy Partnership. And then let's see how we can blend it with other initiatives underway to see if there is an economy of scale and a value that can be created by all of these things converging together into our budgets and into the technology and capability of America's mindset.

Thank you, Mr. Chairman.

Senator DOMENICI. Thank you, Senator.

Senator Allard, first of all, let me say I'm very pleased that you're with us. You're not brand new; I didn't mean that. But, you know, we haven't had you around very long. And you're going to find this is a very fun subcommittee with lots of work to do. And some of the things that you've been working on are here, and you'll have a lot more opportunity to work on them, because you'll fund them here. So, if you'd like to make a few opening remarks, we'll let you——

Senator ALLARD. Well, I'd love to, Mr. Chairman.

Senator DOMENICI. If you'll make them as brief as you can, because of the 3 o'clock vote?

Senator ALLARD. Oh, I'll do that, Mr. Chairman.

STATEMENT OF SENATOR WAYNE ALLARD

Senator ALLARD. First of all, I'm absolutely thrilled to be a part of this committee, and was glad I had the opportunity to serve on it, because you've been such a leader on meeting our energy needs in this country, and I want to join you in that effort.

You know, there's no doubt in my mind that we need to have an ample source of energy—to meet the security needs of this country, primarily, but also just to meet consumer needs, and for us to be competitive throughout the world.

PREPARED STATEMENT

I have a couple of pages here of comments. I'm just going to ask that they be inserted into the record, in addition to what I've just stated.

And I look forward to working with you, Secretary Sell, because I do want to give my colleagues an opportunity to say a few remarks, also.

Thank you, Mr. Chairman.

[The statement follows:]

PREPARED STATEMENT OF SENATOR WAYNE ALLARD

Mr. Chairman, I am very pleased to be a member of this committee, and I thank you for holding this very important hearing today. I think that nuclear energy is one of the most promising energy sources before us. It promises large supplies of clean energy. I have long said that America must diversify its energy sources, and the option of using nuclear simply must be on the table.

Many people have been critical of the United States for not signing on to the Kyoto Protocol. Now, several years later when those countries that did join are being required to meet their first targets, many are not able to do so. France is one

of the few countries meeting its target, and they are doing so largely because they are heavily reliant on nuclear energy.

When we stopped reprocessing in the 1970's, England, France and Japan kept moving forward. They are now operating successful reprocessing facilities. Several years ago I visited sites in France and England where they are currently reprocessing spent nuclear fuel. The process is safe and efficient, and something that we should have been doing in this country years ago.

There is a large up-front investment that has to be made in order to reprocess spent fuel. But I would like to use an analogy that some people may find easier to understand. To build a house in an energy efficient manner is more expensive to build one to regular standards. You have to spend more on higher quality insulation, solar panels cost money, more efficient appliances cost a little more. But you save a lot of money down the road when you pay less in utility charges. Similarly, while the investment for a reprocessing facility is high, because 96 percent of the fuel can be reused, much less must be expended on storage down the road, and much less "new" fuel must be acquired.

I look forward to working with my colleagues and the administration on this very important issue.

Senator DOMENICI. Before I call on Senator Murray, let me say to the Senators that are here, I understand we have two votes at 3 o'clock. And the Energy Committee, which is the two of us, we have a 3:30 meeting.

Senator Allard, is there any—by any chance, could you use part of your afternoon to wrap up these hearings, if we have to?

Senator ALLARD. I believe I can, but let me check my schedule, please, and I'll get back to you in just a minute.

Senator DOMENICI. Senator Murray, would you like to make a few opening remarks?

STATEMENT OF SENATOR PATTY MURRAY

Senator MURRAY. I would, Mr. Chairman, thank you.

And I understand the time limitations, but I did want to say, Secretary Sell, first, thank you, and good afternoon. It's good to see you back on the Hill.

I do have significant reservations, I have to say, about the Department's GNEP proposal. Energy security in our Nation is a top priority for me, like everyone, and we have to do more to wean ourselves off foreign imports of energy sources and replace them with some secure domestic sources. But I strongly question whether GNEP is the answer. I'm not opposed to nuclear energy. All sources of energy have to be explored and utilized if we're to find the best mix for the United States to achieve energy independence. But that requires taking a very hard look at possible sources, and considering several factors, including availability, technical feasibility, environmental impact, and the economics of developing that new resource. And we also have to look for solutions to our energy problems now in using those criteria. That's why I think this proposal falls short.

From what I can tell, it has not gone through the necessary peer review, it's without strong economic cost analysis, and it does nothing to address our energy needs in the near-or mid-term.

But before we go further, I have to point out that this proposal seems to gloss over the difficulty this country has in managing our nuclear waste. And I want to revisit quickly another proposal on cleanup offered by DOE. Accelerated cleanup was sold as a plan to focus on one contaminated site, and once that site was cleaned up and closed, the funds would then be redirected to other sites to ac-

celerate cleanup. The good news, of course, is Rocky Flats was closed this year. But the bad news is, is the EM budget request is cut by $762 million in 2007. DOE broke that deal with the sites, the States, and the Congress. And rather than addressing the nuclear waste legacy, DOE has shifted focus to other areas and left our communities holding the bag.

I'm particularly disturbed by comments made by Under Secretary Garman, when he spoke to the Energy Facility Contractors Group last month. He called for us to get honest about the cleanup projects left around the country. The context of those comments is, the cleanup agreements between the Government and the States. The Government is failing to meet milestones. Funding is being cut back. And DOE officials are telling our States to get honest. DOE signed these agreements and should not be looking to break them.

It's another example of the mixed messages that DOE sends on its cleanup responsibilities. Last year, I had to fight very hard for funding for the vit plant on the Hanford site. I was told by Secretary Bodman, and by you, that DOE stood behind the project. I found that hard to believe, when the only DOE funds offered up for rescission was the $100 million from the vit plant.

In the President's 2007 budget proposal, there is $690 million for the vit plant, and I'm relieved. The budget request is finally where it should be. But the funds for the tank farm activities are down by $52 million, which includes a zeroing out of bulk vit plant. That was proposed by the administration as a way to get the tank waste treated faster, and now the request is zero.

So, let's get honest. DOE has a poor record when it comes to managing nuclear waste. GNEP will add the waste inventory, while doing nothing in the near term to help achieve energy independence. Today there is no place to permanently store spent nuclear fuel. The request for GNEP is $250 million, while the request for EM funds is down. It's striking to me that DOE has proposed a project that would create the same kind of waste that we are struggling to retrieve and treat at the Hanford Tank Farm. I have many concerns, and I'm eager to hear your presentation and to address them during the appropriations cycle.

Thank you, Mr. Chairman.

PREPARED STATEMENT OF SENATOR THAD COCHRAN

Senator DOMENICI. Thank you very much. Senator Cochran has submitted a statement which we will also include for the record.

[The statement follows:]

PREPARED STATEMENT OF SENATOR THAD COCHRAN

Mr. Chairman, I am pleased to join you in welcoming Deputy Secretary Sell to the subcommittee, and I look forward to his testimony about the fiscal year 2007 Budget Proposal for the Global Nuclear Energy Partnership.

Secretary Sell, welcome back to the subcommittee where you worked as clerk for 4 years. Your service on this important subcommittee gives you a solid background to execute our national global nuclear strategy. I am pleased that the Department of Energy is working on a long term strategy to address the nuclear needs of our Nation, from the execution of our nuclear security to the deployment of new nuclear power plants. There is a great need for nuclear power in this country, and as we look to the future, there is going to be an increased need for energy production. Nuclear must be a significant part of that production.

My State is home to the Grand Gulf nuclear power facility in Port Gibson, Mississippi. In addition, we are a leading site to host a new commercial nuclear power plant, which will not only provide jobs and stimulate economic development, but could also provide future rate relief to my State's electricity customers. The support of this new facility would relieve the burden of high cost natural gas currently used to generate electricity.

Lastly, in order to support the exiting fleet of nuclear power plants, as well as support the building of new nuclear facilities, we must recognize the nuclear spent fuel situation. Customers have been contributing to the nuclear waste fund for many years and have seen little benefit from their investment. Utilities have been in litigation with the government spending millions of dollars in legal fees over the issues surrounding spent fuel. I hope that we will work to address these problems so that this country can build a clean and reliable fleet of new nuclear plants.

We will continue to discuss the details of this program over the next few months. I look forward to working with you and my colleagues on the Appropriations Committee to analyze this new initiative and make the best decisions for fiscal year 2007. Thank you for your good assistance in our efforts to make wise decisions.

Senator DOMENICI. Mr. Secretary, please proceed.

Mr. SELL. Thank you very much, Mr.—

Senator DOMENICI. Don't worry about that.

STATEMENT OF HON. CLAY SELL

Mr. SELL. Well, I don't want to lose my audience too quickly.

Mr. Chairman, Ranking Member Reid, Senator Craig, Senator Allard, Senator Murray, it is truly an honor and a great pleasure for me to have this opportunity to come back before this subcommittee to discuss the administration's proposed Global Nuclear Energy Partnership, or what we call GNEP.

Thank you for allowing my written statement to go into the record, and I would like to make some summary comments. And I will try to do that in 5 or 7 minutes.

In many respects, I believe it is appropriate that the first public hearing on GNEP occur here before this subcommittee. From Chairman Domenici's 1997 Harvard speech calling for a broad reconsideration of nuclear policy and reprocessing, to this committee's role in funding plutonium disposition, to this committee's role in funding a great breadth of nonproliferation initiatives, to the creation of the Advanced Fuel Cycle Initiative under the chairmanship of then-Chairman Reid in 2002, this committee, along with your counterparts in the House, has always provided great bipartisan leadership on nuclear matters within our government. So, it is a pleasure to be here today to discuss GNEP.

I would like to tell you today why we are proposing GNEP. I'd like to elaborate on what it exactly is and how we propose, with the support of this subcommittee, to get started.

The President has stated a policy goal of promoting a great expansion of nuclear power here in the United States and around the world. The reasons for this are obvious. As the chairman said, the Department of Energy projects that total world energy demand will increase—will double by 2050. And looking only at electricity, projections indicate an increase of over 75 percent in the next 20 years—75 percent increase in electricity demand over the next 20 years.

Nuclear power——

Senator DOMENICI. Now, that's worldwide.

Mr. SELL. That's worldwide.

Senator DOMENICI. Worldwide.

Mr. SELL. Nuclear power is the only mature technology of significant potential to provide large amounts of completely emissions-free baseload power to meet this need. It will result in significant benefits for clean development around the globe, reduced world greenhouse gas intensities, pollution abatement, and the security that comes from greater energy diversity.

But nuclear power, with all of its potential for mankind, carries with it two significant challenges. The first: What do we do with the nuclear waste? And the second one: How can we prevent the proliferation of fuel-cycle technologies that lead to weaponization?

GNEP seeks to address and minimize these two challenges by developing technologies to recycle the spent fuel in a proliferation-resistant manner and support a reordering of the global nuclear enterprise to encourage the leasing of fuel from what we'll call "fuel-cycle states" in a way that presents strong commercial incentives against new states building their own enrichment and reprocessing capabilities.

Regarding our own policy on spent nuclear fuel, the United States stopped the old form of reprocessing in the 1970's, principally because it could be used to produce plutonium. But the rest of the major nuclear economies, in France, in Great Britain, in Russia, in Japan, and in others, continued on without us. The world today has a buildup of nearly 250 metric tons of separated civilian plutonium. It has vast amounts of spent fuel. And we risk the continued spread of fuel-cycle technologies.

If we look only for a moment at the United States, we are on the verge of a U.S. nuclear renaissance. In many respects, due to the provisions enacted in the Energy Policy Act of 2005, new plants will be built. But if we want many more built—and we need them—I believe the United States must rethink the wisdom of our once-through spent-fuel policy. We must move to recycling.

This administration remains confident that Yucca Mountain is the best location for the United States—for a permanent geologic repository. And getting that facility licensed and opened remains a top priority. Whether we recycle or not, we must have Yucca Mountain. But the capacity of Yucca Mountain, as currently configured, will be oversubscribed by 2010. If nuclear power remains only at 20 percent for the balance of this century, we will have to build the equivalent of nine Yucca Mountains to contain once-through spent fuel.

The administration believes——

Senator DOMENICI. Would you make that statement again?

Mr. SELL. If we continue to have nuclear generation at 20 percent for the balance of this century, because of our once-through spent-fuel policy, we will have to build the equivalent of nine Yucca Mountains.

The administration believes that the wiser course is to recycle the used fuel coming out of the reactors, reducing its quantity and its radiotoxicity so that only one Yucca Mountain will be required for the balance of this century.

So, what exactly is, then, GNEP? GNEP really is——

Senator DOMENICI. Can I interrupt you?

Mr. SELL. Yes, sir.

Senator DOMENICI. And that one Yucca Mountain, under that scenario, would not be filled with the kind of waste we plan on putting in it now, right?

Mr. SELL. It would be filled—we still have a significant amount of Defense waste, in Senator Murray's home State, in Senator Craig's home State, that will go to Yucca Mountain. And there——

Senator DOMENICI. I'm speaking of the domestic side.

Mr. SELL. And on the commercial spent fuel, we believe that up to 90 percent of commercial spent fuel could be recycled before going to Yucca Mountain.

Senator DOMENICI. Which means it would be a different spent fuel.

Mr. SELL. It would be—it would be in a condition with a very low—with a peak dose occurring in year one thousand versus year one million. It would be in a more stable glass form. And it's the radiotoxicity of the waste which really drives capacity size. And by reducing the radiotoxicity, you could fill Yucca Mountain with this glacious stable waste. And that would—we think, would be enough for this century.

Senator DOMENICI. Excuse me for interrupting. Thank you.

Mr. SELL. GNEP is really about identifying the policies, developing the technologies, and building the international regimes that would manage and promote such a growth in nuclear generation in a way that enhances our waste management and nonproliferation objectives.

The program and its full detail is laid out in my prepared statement. But I would like to focus on a few of the key engineering and development efforts that are key to GNEP's success.

First, the Department of Energy seeks to greatly accelerate its work in the demonstration of advanced recycling. This effort builds on the Advanced Fuel Cycle Initiative initiated by this—or by Congress, and specifically this committee, several years ago. We have developed, in the laboratory, recycling technology that does not separate plutonium like the current reprocessing technologies that are used around the globe. Rather, it keeps the actinides together, including plutonium, so that they can be made into fuel to be consumed in fast reactors that will also produce electricity. By not separating plutonium and building in the most advanced safeguard technologies, recycling can be done in a way that greatly reduces proliferation concerns.

Another key objective of GNEP would be to demonstrate, at engineering scale, an advanced burner reactor that can be used to consume plutonium and other actinides, extract the energy potential out of recycled fuel, reducing the radiotoxicity of the waste in repeating cycles so that the waste that comes out of the reactor requires dramatically less geologic repository space.

These technologies come together in the reliable fuel services framework. GNEP will build and strengthen a reliable international fuel services consortium under which fuel supplier nations would choose to operate both nuclear power plants and fuel production and handling facilities while providing reliable fuel services to user nations that choose to only operate nuclear power plants. This international consortium is a critical component of the nonproliferation benefits of the GNEP initiative.

The notion is as indicated on the first chart over here—in exchange for assured fuel supply, on attractive commercial terms, user nations that are interested in bringing the benefits of nuclear power to their economies would suspend any investments in enrichment and recycling. Under the Non-Proliferation Treaty, they have a right to do that. They have a sovereign right. And what we are trying to provide is attractive commercial incentives that would discourage them from acting on those rights.

There are two other key elements of GNEP, from a technology development standpoint. We would hope to work in partnership with other nations to develop small proliferation-resistant, perhaps modular or factory-built reactors that are appropriate for the grids of the developing world. And, in fact, many of the technologies, Senator Craig, being developed as part of the next-generation nuclear plant are appropriate—particularly the gas reactor technology—are appropriate candidates for these types of small-scale reactors.

And, in all cases, we will work to develop and incorporate in the most advanced safeguards technologies and ensure and emphasize best practices for handling of nuclear materials worldwide.

So, how do we hope to begin? In fiscal year 2006 and 2007, the Department proposes to concentrate its efforts on technology development to support a 2008 decision on whether to proceed with these demonstrations. In general terms, our $250 million request for 2007 funding is to initiate work on separations and advanced fuels technology development, transmutation engineering, systems analyses, and planning functions to support the demonstration of a UREX+ recycling plant and to support, over a 10-year period, the demonstration of an advanced burner reactor.

In conclusion, we need to pursue all energy technologies to address the anticipated growth in demand for energy. But, clearly, the growth of nuclear energy is vitally important for the United States and for the world.

Our country can choose to continue down the current path, or we can lead the transformation to a new, safer, and more secure approach to nuclear energy, an approach that brings the benefits of nuclear energy to the world while reducing vulnerabilities from proliferation and from nuclear waste. We believe that we are in a stronger position to shape the future if we are part of it and if we are leading it. And, in many respects as it relates to the fuel cycle, the United States has yielded our leadership position over the last 30 years. We think we need to reclaim it.

Challenges remain in demonstrating the GNEP technologies. But without GNEP, there will be more plutonium throughout the world for generations to come. There will be more spent fuel. There will be greater proliferation risk. There will be more greenhouse gases emitted into the environment, and less energy here at home and abroad. The Global Nuclear Energy Partnership is not a silver bullet, but it is part of a broad strategy, that, when combined with advancements in renewables, clean coal, and other technology developments, can, and will, make a difference in the security, environmental, and energy challenges that we face.

PREPARED STATEMENT

I ask, and I seek, the committee's support of this initiative. I look forward to your questions. And I look forward to working with you as the year progresses.

I'm pleased to take any questions you have.

[The statement follows:]

PREPARED STATEMENT OF HON. CLAY SELL

Mr. Chairman, Senator Reid, and members of the subcommittee, it is a pleasure to be here today to discuss the Department of Energy's fiscal year 2007 budget request of $250 million, to begin investments in the Global Nuclear Energy Partnership (GNEP). This new initiative, which is part of President Bush's Advanced Energy Initiative, is based on a simple principle: that energy and security can go hand in hand.

It is a comprehensive strategy that would lay the foundation for expanded use of nuclear energy in the United States and the world by demonstrating and deploying new technologies that recycle nuclear fuel, significantly reduce waste, and address proliferation concerns. GNEP seeks to encourage the future leasing of fuel from fuel cycle states in a way that allows new states to enjoy the benefits of abundant sources of clean, safe nuclear energy in exchange for their commitment to forgo enrichment and reprocessing activities, to help alleviate proliferation concerns.

The Department of Energy recently estimated that the global demand for energy may increase as much as 50 percent by 2025, with more than half of that growth coming from the world's emerging economies. Specifically, regarding electricity, the growth is projected to be particularly steep, increasing over 75 percent over the next two decades. To begin addressing that challenge today, the President has stated a policy goal that includes world-wide expansion of nuclear power.

The reasons for this are clear. Nuclear power is a mature technology of significant potential to provide large amounts of emissions free base load power. Benefits from nuclear power include the abatement of greenhouse gas emissions, air pollution, and energy diversity. Other nations have reached a similar conclusion. With 24 new nuclear plants under construction world wide and additional plants planned or under consideration, it is important that nuclear energy expand in a way that supports safety, security, and the environment.

All of these factors point to the need for a widespread expansion in the use of nuclear energy. To encourage and support such an expansion, the Department is advocating a new approach to the fuel cycle which we believe will significantly enhance our management of used nuclear fuel. This approach should allow us to make more efficient use of our uranium resources. Based on technological advancements that would be made through GNEP, the volume and radiotoxicity of waste requiring permanent disposal will be greatly reduced, delaying the need for an additional repository through the end of the century.

To meet the goals of GNEP, the Department has developed a broad implementation strategy comprised of seven elements.

First, we must sustain and expand the use of nuclear power in the United States. Action is needed to ensure that there are successor plants to those that supply nearly 20 percent of our electricity. Efficiency gains to existing reactors over the past decade have added the equivalent of 25 additional reactors to the grid, but such gains are approaching a limit. We must build on advances made by the President and Congress to stimulate new nuclear plant construction.

In 2002, the administration announced the Nuclear Power 2010 program, a cost-shared initiative with industry aimed at demonstrating the streamlined regulations for siting and constructing new nuclear plants. Much progress has been made since this program was first announced and today the Department is sponsoring two demonstrations aimed at submitting and obtaining approval of the first combined Construction and Operating License (COL) applications.

DOE is currently working with two consortia of nuclear generating companies and vendors to prepare and submit these COL applications to the NRC by 2007 and 2008, respectively. This, together with the incentives enacted through the Energy Policy Act of 2005 (EPACT 2005) will enable generating companies to proceed with new nuclear plant projects.

The Department is responsible for implementing the Standby Support for Certain Nuclear Plant Delays provisions of EPACT, which is a form of Federal risk insurance to encourage investment in advanced nuclear power facilities by providing coverage for certain costs resulting from certain regulatory or litigation delays. Addi-

tionally, EPACT 2005 contains provisions for production tax credits for advanced nuclear facilities, and a loan guarantee program for low-emission energy production technologies, such as nuclear power plants. We are confident we will see new plants under construction within the next 10 years.

Second, we must address the issue of nuclear waste. A geologic repository is a necessity under all fuel management scenarios, and the 2007 budget request provides $544.5 million to maintain steady progress toward opening the Yucca Mountain repository.

Under GNEP, commercial spent nuclear fuel would be recycled so that transuranic elements would be consumed, not disposed of as waste. Residual waste fission products would be reconfigured for disposal at a geologic repository. In addition, direct disposal will be the only option for a small portion of older commercial spent fuel and certain specialized fuels for which separations processes have not been developed.

GNEP would provide three improvements to spent fuel disposal at a repository by significantly reducing the volume of nuclear waste, enhancing thermal management by reducing the waste form heat load, and reducing the amount of long-lived radionuclides requiring disposal eliminating the need for an additional repository through the end of the century.

Third, we propose to demonstrate recycling technology that would enhance the proliferation-resistance of the fuel cycle compared to existing reprocessing technologies called Plutonium-Uranium Extraction or PUREX. To accomplish this, the Department would accelerate through the Office of Nuclear Energy, Science and Technology's Advanced Fuel Cycle Initiative (AFCI), the development, demonstration, and deployment of new technologies to recycle spent fuel—these are technologies that would not result in separated plutonium—a key proliferation concern presented by current generation reprocessing technologies. Moreover, this technology would only be deployed in partnership with other fuel supplier nations.

The AFCI program legislated by the Congress has over the years identified promising advanced nuclear technology options that are sufficiently developed to allow for a demonstration program to proceed. Acting now will enable us to help shape the global fuel cycle and prepare to accommodate growth in emission-free nuclear power.

In support of this effort, the United States would propose to work with international partners to conduct an engineering-scale demonstration of advanced recycling technologies (e.g., a process called Uranium Extraction Plus or UREX+), that would separate the usable components in used commercial fuel from its waste components, without separating pure plutonium.

Fourth, the United States would develop and demonstrate Advanced Burner Reactors (or ABRs). These "fast neutron" reactors would be designed to consume transuranic elements in used fuel from nuclear power plants, avoiding the need to accommodate this radioactive, radiotoxic, and heat-producing material in a geologic repository for hundreds of thousands of years while it decays. The Department would also propose a new facility that could potentially serve the fuel testing needs of the Nation for the next 50 years, and be used to develop and test the fuels for the advanced burner reactor made from the transuranic product from the UREX+ process.

Fifth, GNEP would build and strengthen a reliable international fuel services consortium of nations with advanced nuclear technologies to enable developing nations to acquire nuclear energy while minimizing nuclear risk. Under a cradle-to-grave fuel leasing approach, fuel supplier nations would provide fresh fuel to conventional nuclear power plants, including small scale reactors, located in user nations that agree to refrain from enrichment and reprocessing.

Used fuel would then be returned to the fuel supplier nations and recycled using a process that does not result in separated plutonium. The recycled fuel would then be used in an ABR in fuel supplier nations. Arrangements would be available to assure secure supply to user nations. Such an approach would allow user nations to receive the benefit of having a reliable supply of reactor fuel without having to make the significant infrastructure investments required for enriching, recycling and disposal facilities.

This approach builds on and goes beyond current International Atomic Energy Agency (IAEA) obligations—user nations would consent to refrain from enrichment and reprocessing for an agreed period, based on economic interest. States choosing to stay outside the GNEP framework and develop their own fuel cycle facilities would receive increased scrutiny. We recognize that there are responsible states that have partial fuel cycles, that do not fit the basic conceptual model, but whose interests can be accommodated in the GNEP framework.

Sixth, the United States would work with the international community to pursue development and deployment of small-scale reactors designed to be cost-effective, in-

herently secure and well-suited to conditions in developing nations. The United States would also encourage developing and deploying a small scale reactor that utilizes the same nuclear fuel for the lifetime of the reactor, eliminating the need for fuel replacement. As world population increases by 3 billion people by 2050, energy demands and world cities will expand, making it all the more important to provide the option of meeting some of that increased energy demand without increased greenhouse gas emissions or pollution.

Finally, under GNEP, an international safeguards program is an integral part of the global expansion of nuclear energy and the development of future fuel cycle technologies with enhanced proliferation-resistance. In order for the IAEA to effectively and efficiently monitor and verify nuclear materials, the United States would propose to design advanced safeguards approaches directly into the planning and building of new, advanced nuclear facilities and small-scale reactors. Over the next year, we will work with other elements of the Department to establish GNEP, paying special attention to developing advanced safeguards and developing the parameters for international cooperation. We will also continue to work closely with IAEA and our international partners to ensure that civilian nuclear facilities are used only for peaceful purposes.

The Department has proposed $250 million in the fiscal year 2007 budget as an initial step of a plan to accelerate the development of technology as part of GNEP. With these funds, the Department would focus its AFCI research and development on preparing for an engineering-scale demonstration of the most promising recycling technologies, such as the UREX+ separations technology, advanced burner reactors and an advanced fuel cycle facility, used to fabricate and test the fuels for advanced burner reactors.

This request represents the Department's best assessment of the GNEP program technical development priorities and sequencing toward demonstration facilities. The fiscal year 2007 request shows that significant growth in funding over the fiscal year 2007 request is necessary for the planning of the three integrated demonstration facilities.

In fiscal year 2006, mission need would be established for these facilities and the Department would begin work on an Environmental Impact Statement for the three facilities, which would continue through fiscal year 2007. In parallel with this, in both fiscal year 2006 and fiscal year 2007, the Department would continue research and development to refine the UREX+ technology, begin work on a conceptual design report, acquisition strategy, functions and operating requirements and other analyses leading to the development of baseline costs and schedules for the UREX+ demonstration, the advanced burner reactor, and the advanced fuel cycle facility by the end of 2007.

The Department would propose to invest $25 million on the advanced burner reactor technology in fiscal year 2007, to complete pre-conceptual design and complete a series of extensive studies to establish cost and schedule baselines and determine the scope, safety, and health risks associated with fuel design, siting and acquisition options. Last month, the United States signed a systems arrangement agreement with France's atomic energy commission and the Japan Atomic Energy Agency to cooperate on the development of sodium fast reactors. It is anticipated that this agreement will establish the foundation for further collaborations on fast reactors with these countries, and others that are expected to join the agreement in the future, in support of GNEP.

The Department's goal is to continue research, development and experiments on the key technologies, complete technical and economic feasibility studies and develop a more detailed costs and schedules for these demonstration facilities to inform decisions by early 2008 on whether to proceed to the next phase, building these demonstration facilities. Appropriate pilot scale research and development for the demonstration projects would proceed to develop an improved planning basis for these facilities.

More accurate estimates of the demonstration phase will be available as the conceptual design phase is completed. As noted earlier, the Department has already started to engage other countries and we will be looking for a sizeable portion of GNEP costs to be shared by our partners and industry starting in fiscal year 2008.

In summary, nuclear energy by itself is not a silver bullet for energy supply, in the world or for the United States and we need all technologies to address the anticipated growth in demand for energy. Regardless of the steps the United States takes, nuclear energy is expected to continue to expand around the globe.

We can continue down the same path that we have been on for the last 30 years or we can lead a transformation to a new, safer, and more secure approach to nuclear energy, an approach that brings the benefits of nuclear energy to the world while reducing vulnerabilities from proliferation and nuclear waste. We are in a

much stronger position to shape the nuclear future if we are part of it and hence, GNEP. GNEP is a program that that looks at the energy challenges of today and tomorrow and envisions a safer and more secure future, encouraging cooperation between nations to permit peaceful expansion of nuclear technology while helping to address the challenges of energy supply, proliferation, and global climate change.

Thank you. This concludes my formal statement. I would be pleased to answer any questions you may have at this time.

RECYCLING SPENT FUEL TECHNOLOGY

Senator DOMENICI. Thank you very much, Mr. Secretary. That's a very succinct and understandable presentation.

We're going to have to learn to use some words that I'm going to start with today and see if I can get them fixed in my own mind.

Europe recycles or reprocesses now, do they not?

Mr. SELL. That's correct.

Senator DOMENICI. And they use a rather well known process called PUREX?

Mr. SELL. They do.

Senator DOMENICI. Tell me—or let me ask. That process—we're going to go one step further, or one step better—if this program is adopted and carried out, because the PUREX process does not—separates out plutonium in a liquid form as it proceeds through its process. Is that correct?

Mr. SELL. Yes, that is correct.

Senator DOMENICI. Therefore, it is—go ahead and get some water—therefore, it has some proliferation problems that are pretty obvious, is that not correct?

Mr. SELL. That's correct.

Senator DOMENICI. Now, the President, in his proposal, has chosen to go to a next-technology, which is UREX+. And I think you've stated to us the difference, but let me just put it in the context of the difference between what's going in the world now and what we would be doing. In our process, as the—as it proceeded, what would come out when you run the spent fuel through would not be pure plutonium, it would never separate out. It would come out in a compound attached, and never be liquid and never be separate. Is that correct?

Mr. SELL. That's correct.

Senator DOMENICI. And then, that—what you get as a result of that is reused—is that correct?—and reburned, so that you make more energy and use up the energy that we were going to throw away when we were going to lock it up in Yucca Mountain?

Mr. SELL. The product streams out of the UREX+ process produce uranium, they produce an actinide stream, which is plutonium bound with the other actinides, and then a fission product stream. The fission product stream would be disposed of. The actinides would be made into fuel that would be burned in the advanced burner reactor. And the uranium could be either re-enriched for use in a lightwater reactor, or it could be disposed of as low-level waste.

Senator DOMENICI. Now, where are these processes, at this point? And what will the $250-plus-million that you're asking for from this committee be used for?

Mr. SELL. The UREX+ technology has been demonstrated at a laboratory scale.

Senator DOMENICI. Where?

Mr. SELL. At Argonne National Lab.

Senator DOMENICI. Right.

Mr. SELL. And it is our intent—and we think it is important—to move to demonstrate that technology on an engineering scale. It is our hope, and it is our expectation, that—in order for an approach like GNEP to work, that these technologies need to be commercialized. But there is significant engineering and development work that needs to be done. And so, a great majority of the amount of money that we are requesting for fiscal year 2007 would be used to support the design work, the environmental work, and other development work that needs to be done to support a decision to construct a demonstration facility in 2008.

And if I can go back, you mentioned PUREX. You know, PUREX was actually developed here in the United States——

Senator DOMENICI. Correct.

Mr. SELL [continuing]. As part of our weapons program, so that we could produce plutonium for use in nuclear weapons. And it was—we used it here in the United States on the commercial side, and it was in the mid-1970's that we decided, for proliferation reasons—and I think perhaps correctly, we decided that we should stop doing that. And we hoped, when we made that decision—when President Carter made that decision in 1977, that the rest of the world would follow. But they did not. And the rest of the world has deployed PUREX on a commercial scale, resulting in 250 metric tons of plutonium that is now in commerce around the world today. And that presents, in our judgment, a significant generational proliferation concern. And we want to develop technologies that will stop the production of plutonium, and also technologies that can be used to burn down plutonium stockpiles, plutonium inventories, over the coming decades.

Senator DOMENICI. Thank you for that explanation. That—I failed to mention, that is our technology. We did do it. We did use it. I mean, it was commercialized.

I'm going to yield now to Senator Craig. And the vote's not yet up, incidentally.

Senator CRAIG. Mr. Chairman, let me go for a few moments. But my guess is that we probably ought to get out of here in 5, hadn't we, if we're going to——

Senator DOMENICI. Go to our meeting?

Senator CRAIG [continuing]. Catch that vote?

Senator DOMENICI. Yes. Is it up now, the vote?

Senator CRAIG. The vote is on now.

Senator DOMENICI. I'm very sorry. I didn't see it.

Senator CRAIG. Yeah, the vote is——

Senator DOMENICI. I guess we should.

Senator CRAIG [continuing]. The vote is on now.

Senator DOMENICI. Senator, why don't you proceed, and then—Senator Allard, do you want to go vote and come back?

Senator ALLARD. Yeah, that's what my plan would be.

Senator DOMENICI. Please do that.

Senator ALLARD. We have two votes on, Mr. Chairman.

Senator DOMENICI. All right. We'll just remind the Secretary to wait just a while, while we have two votes. He's going to come back

and complete the meeting. I'm going to wait until the last minute here.

DEPARTMENT'S GNEP TECHNOLOGY OBJECTIVES

Senator CRAIG. Okay.

Mr. Secretary, in GNEP, the initial phase that you're talking about, the engineering scale demonstration phase, proliferation-resistant spent-fuel processing, how long—you said construction by 2008. When do you think that plays out? And we're looking at a price tag for totality of that of upwards of——

Mr. SELL. The—just for the UREX+ demonstration facility, we would anticipate—even though it would be sized somewhere probably in the 10 to 25 metric-ton-per-year size, so relatively small—but, on order, we would expect that facility—our best estimates on the costs would be between $700 million and $1.5 billion. And we would hope to begin construction in 2008, and have construction complete 3 to 4 years thereafter, to go into operations.

Senator CRAIG. And then the next phase is what, the advanced fuel cycle?

Mr. SELL. The next phase would be the—within 10 years, we would like to build a demonstration advanced burner reactor.

Senator CRAIG. Burner reactor.

Mr. SELL. There are a number of potential technologies that could be used for that. And we want to do a substantial amount of work in conjunction with our international partners, in determining the appropriate technology. But we would hope to build and—to construct and operate that within 10 years.

The key R&D challenge—the biggest R&D challenge—we've done UREX+ in the lab. We've built, certainly, fast reactors that can be modified for a burner role. The biggest challenge is in developing and qualifying an actinide-based fuel. And so, that will require significant laboratory work to develop that fuel.

As you know, today we are doing small-scale actinide fuel tests, in partnership with France, in their fast reactor, as well as in partnership with Japan. But that's going to require a significant amount of development work over the next 5 to 10 years.

Senator CRAIG. Then in this whole concept, the exportable modular reactor is the last phase—is that where the effort to contain—to offer up, but contain——

Mr. SELL. Under Secretary Bob Joseph and I, we went to a number of capitals in the United Kingdom, France—we saw Dr. El Baradei in Vienna—Moscow, Beijing, and Tokyo, to talk about this idea. And the ideas were well received, and the objectives of GNEP were well received. But there was a tremendous amount of interest in not just those countries, but other counties—South Korea and others, Canada perhaps—joining together with us in developing advanced reactors for deployment in the developing world.

And so, that is something that we would seek to move, in parallel with these other technology development efforts. And it is something that we would hope to have significant international participation in, as well.

Senator CRAIG. Okay. I suspect, Mr. Chairman, that we ought to——

Senator DOMENICI. Could I just follow up on your very last one, and you wait on it?

Senator CRAIG. Yes.

Senator DOMENICI. The one thing that I keep hearing—and I want to stress it a little bit, in context of Larry's last question—we talk about the internationalization of this issue and the partnership. And I hope that as you talk about the costs for these various demonstrations and moving from a small one to the next level, that you are talking about the possibility, or even the probability, that we can get our partnership countries to come into that ball game, too, of helping develop those kinds of experimental projects. Because they will be costly. I'm not sitting up here saying I'm against things of this type because they're costly. I'm excited that America might be a considering a major new program of this type. This is what we used to be about; but we've gotten so fearful, we won't do anything like this. So, I'm on board. But it seems to me the benefits are not going to be just to us, right?

Mr. SELL. That's correct. There is—when we think about it in the international context, I mean, on the first order, as I said earlier, we've—in some ways, we have yielded our leadership role in the fuel cycle. The French, the British, the Japanese, and the Russians have gone on without us for 30 years. And they have significant capabilities—in some cases, that are better than ours.

Senator DOMENICI. Right.

Mr. SELL. And so, we are seeking to work in partnership with them to accelerate, to take advantage of the advances we have each made to accelerate the development, the demonstration, and the deployment of these technologies as quickly as possible. So, they bring talent and expertise to the table.

But one of the other things that has been quite encouraging is that they also seek full partnership, which means in-kind contributions, and, we would expect, significant financial contributions. That is—we really seek to pursue these technologies in partnership. And that is, in addition to the benefits that I've laid out, we think it also has other significant benefits, in that it will allow us to accelerate, working in partnership with these other countries, the phase-out of the current PUREX technologies that are used around the world today, and the phase-in of more advanced proliferation-resistant recycling technologies.

Senator DOMENICI. That's why I asked. It would seem to me that the benefits are for them, too.

Mr. SELL. Indeed.

Senator DOMENICI. Because the benefit to the world is that we would—we might all be engaged in the most nonproliferation-active formulation of machinery, rather than what we've got now. And they ought to be beneficiaries, and we ought to help pay for it.

Mr. SELL. Mr. Chairman, we really believe that, through these technological advancements, we can make it commercially attractive to recover the economic value of spent fuel. And once we can do that, then that allows a international fuel leasing regime to work.

Senator DOMENICI. I'm going to just close by saying: When we talk about the dollar numbers, we have never talked about how much value added there is going to be in this process. That might

be the subject matter of maybe your doing some research and submitting to us: If this works, what is all that extra energy that we're going to have for sale? What is its value going to be? Because it's going to be somewhere, isn't it?

Mr. SELL. There will be a tremendous value of the electricity produced, and a tremendous savings by avoiding the cost of building nine Yucca Mountains over the course of the century. And, quite frankly, the engineering and the packaging required to dispose of hot spent fuel is much greater than that, that would be required to dispose of the more stable glacious waste form.

Senator DOMENICI. We'd get a whole lot more fuel to burn.

Mr. SELL. That's correct.

Senator DOMENICI. That's got a value added that this process is going to yield, right?

Mr. SELL. That's correct. And right now——

Senator DOMENICI. That would be very, very large. Huge amount.

Mr. SELL. It's a significant amount. And right now spent fuel that is headed towards Yucca Mountain still has over 90 percent of its energy value. And by developing recycling technologies, we think we can recover a great portion of that energy value and produce electricity with it.

Senator DOMENICI. We're going to be in recess. The Secretary's going to wait. Probably going to finish at 4 o'clock, or a little after 4 o'clock, if that's all right with you. But I won't be coming back, Mr. Secretary. But the Senator from Colorado will preside.

Thank you very much.

Mr. SELL. Thank you.

Senator ALLARD [presiding]. I'll call the committee to order. And, just for the record, I'm Senator Allard that's now presiding, at the request of the chairman, Senator Domenici. And I'd like to, again, welcome you, Mr. Secretary.

We were starting into the question part of the committee. I left early to go down and vote, and have now returned to wrap up our deliberations here on the committee.

GLOBAL NUCLEAR ENERGY PARTNERSHIP PROLIFERATION RISKS

I've had an opportunity to go and tour facilities in France, as well as in England, and what they do to reprocess nuclear fuel, which you indicated in your own remarks is—that it is technology that we had here in the United States, and then they adopted that technology. And, frankly, I am excited about the prospects of moving to UREX+ instead of PUREX. They use the PUREX technology. Am I correct on that?

Mr. SELL. That's correct.

Senator ALLARD. And so, I'm excited about the UREX+ policy. And it's my understanding, also, I just want to make sure that's on the record—is that it does take away the proliferation risks completely if we process that, or is there still some proliferation risk?

Mr. SELL. I think, from a public policy standpoint, Senator Allard, we must always be mindful of the proliferation risk anytime we are dealing with nuclear materials and nuclear technologies.

And so, I would be reluctant to suggest that any technology removes all risk, but we——

Senator ALLARD. But this lessens the risk, then, is that——

Mr. SELL. But the——

Senator ALLARD [continuing]. The plan?

Mr. SELL [continuing]. UREX+ technology prevents—it increases, substantially, the proliferation resistance of the material, to a point where this Government should be quite comfortable. And we would also build in the most sophisticated safeguards technologies into the UREX+ plant. So, not only do we have a much more proliferation-resistant stream of material coming out, but it would have the most advanced safeguards, and all of these plants would only be built, under our conception, in existing fuel-cycle states. So, we think this offers substantial nonproliferation benefits.

And there are two other nonproliferation benefits. By developing and deploying advanced burner reactors, and developing and deploying UREX+, we can begin to slow the accumulation worldwide of inventories of separated civilian plutonium, and we can build the capability that allows us to burn down and dispose of that plutonium. And then, thirdly, we can develop, we believe, an international regime, or we would seek to develop an international regime, that would discourage the investment and construction of enrichment and recycling facilities in countries that do not have them today.

Senator ALLARD. Now——

Mr. SELL. So, the——

Senator ALLARD. Go ahead.

Mr. SELL [continuing]. So, in sum, we think there are—from a systems standpoint, there are substantial nonproliferation benefits, and substantial nonproliferation enhancements, that would flow from the GNEP proposal.

Senator ALLARD. And I understand that right now, under UREX+ technology, we are working with two other countries. And that's France and Japan. Is that correct?

Mr. SELL. We have, through existing relationships that the United States has, we have been conducting tests and experiments and development work through funding provided by this committee. And we would seek to broaden the work to also include Russia, the United Kingdom, if they choose, Japan, and China. Those are the nations where well in excess—or around 70 percent of the world's nuclear reactors exist. Those are the nuclear economies of a sufficient scale to justify significant investments in advanced fuel-cycle technologies, and we would look to work with those countries in developing these technologies on an accelerated timescale.

INTERNATIONAL INTEREST IN ENRICHMENT SERVICES

Senator ALLARD. Now, Iran is on everybody's mind, because they've decided to build and operate a uranium enrichment plant, in direct violation, actually, of the Nuclear Proliferation Treaty. And with this capability, they could not only produce fuel for civilian purposes, but also weapons activity, as well. And you have a plan that calls for a uranium fuel leasing plan that would provide

fuel to countries interested in developing a civilian nuclear program.

Do you believe that other countries—we've already kind of—sounds like you've already begun to kind of form a coalition, but do you believe that these countries would be willing to contract for enrichment services instead of developing their own domestic capabilities?

Mr. SELL. We do, Senator Allard. And this is occurring now, on a smaller scale, around the globe. Many countries with significant nuclear power investments, like South Korea, have not made their own investments in enrichment and recycling. And the hope is—I mean, really, from a—from a world energy supply standpoint, and if we really want to address environmental concerns, pollution concerns with nuclear power, the world's going to need a significant expansion of nuclear power. And that's going to occur in many countries.

And we think a system could work, where states that have already made, or have economies that would justify significant investments in enrichment and reprocessing technologies, that we could lease fuel. So, a country like the United States could lease fuel to a country. And that fuel would then—would be burned in a reactor, but then taken back to be recycled and disposed of in the fuel-cycle country. We think that can be offered on attractive—we would propose that we could offer that on attractive commercial terms. So, there's a real incentive for a country, who is only interested in bringing the benefits of nuclear power to their economy, of leasing the fuel. And only those countries that are really seeking to—we would suggest that countries that chose not to go the more economic route, and, instead, choose to make investments in their own enrichment or recycling—or reprocessing capability, it would suggest that perhaps they have other motivations.

Senator ALLARD. And so, that's basically your plan. You're going to try and incentivize them with some economic alternatives. You hope that they'll not be able to refuse, because we would then have the original reprocessing plants constructed here. We'd do that them for them at a reasonable price, so that they'll use our facilities.

Mr. SELL. And it wouldn't just be here. It would also be in France or Japan or China or elsewhere. And it's—that diversity of suppliers to potential consumer nations would also give them the security, which I think countries would seek, in having a diversity of enrichment services suppliers.

Senator ALLARD. And have you gotten any firm commitments from any of the countries willing to come on with this program at this point? Or are you aware of real strong support for it? I'll put it that way.

Mr. SELL. When—a few weeks ago, I, with Under Secretary Bob Joseph from the State Department, traveled to London and to Paris, to Moscow, Beijing, Tokyo, and we also stopped to see Dr. El Baradei at the International Atomic Energy Agency, in Vienna. And we laid out our ideas and sought their consultation. And there was broad agreement on the objectives that the world needed a dramatic increase in nuclear power, that we should work together to develop advanced recycling technologies that did not separate

plutonium, that we should do this in international partnership, and that we should work to facilitate an international regime of fuel leasing so that we could discourage the proliferation of enrichment and reprocessing technologies.

There was broad agreement on all of those issues, and a great interest expressed by those governments in continuing to discuss with us how we could further the partnership.

NATIONAL NUCLEAR SECURITY ADMINISTRATION AND STATE DEPARTMENT PARTICIPATION IN GNEP

Senator ALLARD. Now, the GNEP program is a very comprehensive research and development program that includes work on advanced reactor technology, fuel recycling, waste reduction, and global nuclear fuel services, small reactors, and enhanced nuclear safeguards. And when we look at the budget, it seems to focus on large-scale engineering demonstrations of fuel recycling capability, with minimal involvement outside the Office of Nuclear Energy. And it's unclear, at least to me, from this budget, when the Department will undertake research, reliable fuel services, small-scale reactors, the enhanced nuclear safeguards, and basic research and development that could address a number of concerns related to our national security, particularly in the earlier phases of the program.

My question is: Why has the Department elected to minimize the direct and immediate engagement of the NNSA and the Department of State at the onset of GNEP?

Mr. SELL. With the greatest level of respect, Senator Allard, I have to disagree with the premise of your question. The National Nuclear Security Administration has been heavily involved, as has the State Department, as have other elements of the interagency policy formulating bureaus within the administration.

So, they have been involved. I think we have their—I know for a fact we have their strong support in moving forward on this.

There is an emphasis, in our budget request for 2007, on moving forward on the first key demonstration facility, which is the demonstration of the UREX+. That has been demonstrated at a laboratory scale. We think it is important, as quickly as possible, to demonstrate it on an engineering scale. And so, that does receive a significant portion of our—of the $250 million budget request for fiscal year 2007.

MIXED OXIDE (MOX) PROGRAM COST INCREASE

Senator ALLARD. I'd like to move on to the MOX Program. When I was chairman of the Strategic Subcommittee on Armed Services, we had some discussion with the MOX Program, where we have the recycling facilities at Savannah, Georgia. And, you know, it's—like was mentioned earlier, it's basically American technology that's been modified some, perhaps, by both the French and the Germans. But it's basically—was originally American technology.

I'm concerned about some reported overruns on the efforts down there. The IG did a report that said that cost increases may amount to $3.5 billion, where we were planning on $1 billion in the budget. Can you address that?

It seems to me we need to have somebody riding herd a little closer over the operation down there, and I'm wondering if perhaps maybe you could give us some insight on what's happening with the MOX facility in Savannah, Georgia.

Mr. SELL. Several years ago, after our country had made the agreement with the Russians to dispose of plutonium, we did make a decision to build facilities, MOX fuel fabrication facilities, as well as other processing facilities, at the Savannah River site. And, early on, it was suggested, at the time, that the cost of those facilities would be, in total, of—I may not have the numbers exactly right, but, on rough order, $2 billion.

That was not a very good number, obviously. And it is old. Commodity prices have increased significantly since that estimate was made. There was a failure by the Department and its contractor team to fully appreciate the costs that would be required to build that French MOX technology here in the United States. And there were other problems with the estimate. The Department is working to correct those.

I take seriously your counsel to keep a tighter rein on activities down there. But the plutonium disposition program remains an important U.S. objective, and we intend to move forward and accomplish that in as economically feasible a way as possible.

Senator ALLARD. Well, I do—I think that is very important. And, you know, you indicated cost of commodities was one of the factors. What other factors did we have that might have added to the cost of it?

And the rest of this question is: Did we have incentive-driven—did we have incentive-driven contracts with the contractor down there?

Mr. SELL. We—if I may, I would like to give a more complete answer on exactly what—the contract provisions that we have. I believe, as a general statement, that the contract does have significant incentives in it for contractor performance, but I would like to answer—give you a more complete answer on the record, if I may.

U.S. MIXED OXIDE FACILITY COSTS

Senator ALLARD. Yeah, that would be fine.

Mr. SELL. The other elements of the cost growth—and I—you know, part of it was commodity—the increased price of commodities. Part of it was simply that the $2 billion number was a 2000-year number, not a 2005 number. And there was also a failure, quite frankly, of the Department and our contractors to fully appreciate how costly it would be to build the French technology plant here in the United States. We made assumptions that we shouldn't have made, and those are costing us now.

Senator ALLARD. What specific assumptions—how did you—I mean, where were you wrong in your assumptions? I'm going to press you a little bit here.

Mr. SELL. I will—I can't—you know, unfortunately, I'm not prepared, today—or I don't have my mind today, Senator Allard, the exact things that we missed on this, but——

Senator ALLARD. Maybe you could get a memo to the committee on that, and we'll——

Mr. SELL [continuing]. But we will——

Senator ALLARD. Yeah.

Mr. SELL [continuing]. Follow up, in written detail, on that issue, if I may do that.

[The information follows:]

U.S. MIXED OXIDE FACILITY COSTS

The total project cost estimate for the U.S. MOX facility as reflected in the fiscal year 2007 budget request is $3.6 billion. However, the cost estimate and schedule will be formally validated prior to the start of construction as part of the Department's project management process, and reported to Congress. The reasons for the cost increase are: the 2½ year delay in the negotiation of the liability agreement with Russia resulting in the extension of the MOX construction schedule, further extension of the construction schedule to conform to the expectation of level funding in the outyears, unanticipated complexities in adapting French MOX technology to use weapon-grade plutonium, increases in the cost of construction materials since the original estimate was made, and the incorporation of more stringent regulatory and security requirements into the design of the facility. With regard to incentive driven contracts, DOE is negotiating multi-tiered performance incentives for the construction and operations phases of the MOX Project, which will contain a fee structure to control cost growth and schedule slippage.

Senator ALLARD. Yeah. We'd appreciate that so that we fully understand the issues down there.

And I'm one that would like to see these things carried in a timely manner, because I think when you start running into delay problems and accelerated costs, you tend to lose support within the Congress. And this is an important program, and I hate to lose that support. I——

Mr. SELL. The——

Senator ALLARD. Go ahead.

Mr. SELL. The delays—you know, even though this—the agreement was made to do this many years. It has taken a number of years, and—to get the appropriate agreements in place with the Russians. And when Secretary Bodman got to the Department, about a year ago, and realized that we still did not have the agreements that we'd been trying to get with the Russians that would allow this project to move forward, he and Secretary Rice engaged the Russians, and we were able to make significant progress on resolving issues as to liability which had prevented—which had really left this project in a stall for several years. So, we feel like we have finally made progress on that. The Department broke ground, finally, on the facility last fall. And we look forward to moving forward with it. But it, unfortunately, will be at a higher cost.

TRANSPORTATION FUELS

Senator ALLARD. Let me move on to our transportation fuels. I think we're all quite aware that the transportation sector is a huge consumer of energy in this country. And there's some concern about the high-temperature reactors that are effective in producing hydrogen for transportation. And where are we in the efforts by the Department to produce these kind of reactors that will allow for the production of hydrogen? Or is it just assuming that we're not far along on nuclear hydrogen research to—at this point in time, to be funding it? You have dropped—reduced your 2006 funding levels, and that's what's prompting this question.

Mr. SELL. It is our judgment at the Department that over the long term the President's Hydrogen Fuel Initiative that he laid out

in the—in his State of the Union of 3 years ago, offers significant promise for getting our transportation sector off of the internal combustion engine and onto electricity-based fuel cells. And we are—we have a broad program to develop those technologies, the storage technologies, the fuel-cell technologies, the automotive technologies, as well as the question of: How will we produce all of this hydrogen?

Today, the only economical way to produce hydrogen, or the principal economic way of producing it, is through reforming natural gas. But we think, in the future, as hydrogen demands increase significantly, we can produce it with coal, and we can also—and other technologies—and we think hydrogen will be—I mean, nuclear hydrogen will be a—nuclear power plants will be a significant technology producing hydrogen.

It is our judgment, I believe—and I will leave my statement to be revised by the technical experts—that the most promising nuclear technology for producing hydrogen is very high-temperature gas reactor. And a technology such as that, I believe, was authorized in the Energy Policy Act of 2005. It's referred to as the next-generation nuclear plant. And we have requested $23 million as part of our fiscal year 2007 budget to continue developing that reactor so that it can be demonstrated—built and demonstrated on a timescale consistent with that called for by the Energy Policy Act.

We think that technology can still be developed, and is moving along consistently with other portions of the Hydrogen Fuel Initiative.

Senator ALLARD. Well, why was there a reduction in your funding level for 2006?

Mr. SELL. If I may, I—that's another question I'll need to——

Senator ALLARD. Okay.

Mr. SELL [continuing]. Take for the record.

Senator ALLARD. Very good.

[The information follows:]

TRANSPORTATION FUELS

With an appropriation of $40 million in fiscal year 2006 and a $23.4 million budget request in fiscal year 2007, the Department has the level of funding needed to continue the progress necessary to inform a decision in 2011 on whether to proceed with construction of the NGNP. With these funds, the Department will continue the graphite particle fuels development effort, which is the critical path work for determining the feasibility of the technology for efficient electricity and hydrogen production. Sample fuel irradiation testing would begin in fiscal year 2007 as well as preparation for post-irradiation examination of the fuel.

ADDITIONAL COMMITTEE QUESTIONS

Senator ALLARD. I don't have any other questions. I have another committee meeting I've got to get to. And so, I'm going to request that the record remain open until close of business Friday for member statements and questions. And I also hope the Department will respond to these questions that are left open in a timely manner. Most committees I've been a part of have asked a response within 10 days. Is that about the time period that—if you can get your responses back to us within 10 days, we'd appreciate it——

Mr. SELL. We will do so.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SENATOR PETE V. DOMENICI

GLOBAL NUCLEAR ENERGY PARTNERSHIP (GNEP) PROLIFERATION CONTROLS

Question. The cornerstone of the GNEP is the development of a proliferation resistant fuel recycling plan that will reduce the amount of spent fuel that must be disposed of and recycle the uranium used in existing reactors.

Please explain to the committee what advantages this proposal has over existing fuel recycling programs and what steps the Department is taking to guard against the proliferation of separated plutonium.

Answer. Under study for the past 5 years, the Department believes that the Uranium Extraction Plus (UREX+) technology is the best known and proven. It provides for the group separation of transuranic elements (which include plutonium) contained in spent nuclear fuel and, therefore, would not result in a separated pure plutonium stream as is the case with current reprocessing technology. To impede diversion of material, this technology would use state-of-the-art safeguards approaches and advanced instrumentation to account for all the material used in the process. Incorporated early in the design, the combination of safeguards and the separation process ensures that material could not be easily diverted without being identified. Finally, an integrated set of fuel cycle facilities which include UREX+ would have the capability to manufacture fast reactor fuel and use an advanced burner reactor for permanent destruction of civilian inventories of pure plutonium. By demonstrating and deploying new technologies to recycle nuclear fuel, we would minimize waste, and improve our ability to keep nuclear technologies and materials out of the hands of terrorists.

GNEP—BUDGET SPECIFICS

Question. The GNEP program builds on the existing Advanced Fuel Cycle Initiative and provides $250 million in funding to initiate the research and development and to demonstrate the UREX Plus process, an advanced burner reactor, and an advanced fuel facility. This effort will not be easy and will require the support of our best scientific minds at all our national labs. However, this budget is not specific as to what activities will be funded and where this research will occur.

When will we know more about the specifics of the program?

Answer. The Spent Nuclear Fuel Recycling Program Plan is being provided to Congress by the end of May 2006 in response to fiscal year 2006 EWD Conference Report language and will provide additional specifics on the GNEP program. The report focuses on the plans for demonstration of the advanced recycling technologies on a scale sufficient to evaluate commercialization of the technologies.

Question. Will you be developing an R&D roadmap and develop a division of labor among the labs?

Answer. The Department has conducted an extensive amount of R&D under the Advanced Fuel Cycle Initiative program over the last several years to bring advanced technologies for enhancing the efficiency of the fuel cycle to a state of readiness for the engineering-scale demonstration. As previously discussed, the Department is currently preparing the Spent Nuclear Fuel Recycling Program Plan that will provide additional information. While Idaho National Laboratory is the lead laboratory for the GNEP Technology Demonstration Program, the participation by and capabilities of all of DOE's national laboratories are critical to the program's success. Nine national laboratories—Idaho, Argonne, Brookhaven, Lawrence Livermore, Los Alamos, Oak Ridge, Pacific Northwest, Savannah River and Sandia—have provided input into the Department's development of and vision for GNEP. These nine national laboratories are also currently involved in the preparation of work scope and funding requirements.

Question. I understand you will use funding provided in fiscal year 2006 to begin work on an Environmental Impact Statement for each of the three main facilities—where will they be located?

Answer. The Department has made no decisions with respect to locations for the engineering scale demonstrations of the advanced recycling technologies. The Department's fiscal year 2006 appropriation provided funding to initiate an Environmental Impact Statement (EIS) on recycling spent nuclear fuel. In March 2006, the Department initiated the National Environmental Policy Act (NEPA) activities with the issuance of an Advance Notice of Intent to prepare an EIS. The NEPA analyses

will inform a decision in fiscal year 2008 as to where the integrated recycling demonstration facilities would be located.

Question. How much will the GNEP program cost to implement and over what period of time?

Answer. A preliminary, order-of-magnitude cost estimate for the GNEP initiative ranges from $20 billion to $40 billion. This includes the cost of Nuclear Power 2010 and Yucca Mountain over the next 10 years as well as the cost of demonstrating integrated recycling technologies. Previously reported estimates for the cost of bringing the three technology demonstration facilities to initial operation range from $3 billion to $6 billion over the next 10 years. In 2008, the Department will have more refined estimates of the cost and schedule to complete the full 20-year demonstration effort. One of the primary purposes of the engineering scale technology demonstrations is to produce reliable estimates of the total life cycle cost of GNEP.

UREX+ RECYCLING PROCESS

Question. I traveled to France in December and received an update on the French spent nuclear fuel recycling program that is built on the U.S. developed "PUREX" process. The French separate Uranium which forms 95 percent of the volume of spent fuel. They also separate Plutonium which they recycle in a Mixed Oxide fuel that produces additional energy in their fleet of existing Light Water Reactors. I understand that although the volume of waste has been significantly reduced, the heat load would continue to drive the loading of a final repository. The Global Nuclear Energy Partnership initiative proposes additional research and development of a "Uranium Extraction plus (UREX+)" process to address the limitations of the PUREX process.

How would the UREX+ process address the limitations and provide a cost-effective, proliferation resistant alternative?

Answer. The transuranic product from the UREX+ process is more proliferation resistant than the product from current separations plants because there is no separated pure plutonium stream. The transuranic product provides a significantly higher radiation field than purified plutonium, and the TRU mixture is less attractive for diversion than pure plutonium.

A modern commercial UREX+ and fuel fabrication capability would be equipped with state-of-the-art monitoring and accountability systems specifically designed to prevent unauthorized access and diversion of materials. One of the advantages of an engineering scale demonstration of the UREX+ technology is the ability to demonstrate these monitoring and accountability systems.

Question. What are the milestones and costs associates with this research and development? What are the critical decision points?

Answer. The milestones and costs for various research and demonstration steps, including spent fuel separations process, are currently being developed. The Department's current efforts are aimed at conducting the applied research, engineering, and environmental studies that would be needed to inform a decision in 2008 on whether to proceed with detailed design and construction of the engineering scale demonstration facilities. The Department has set a goal of facility start-up between 2011 and 2015. A more detailed baseline cost and schedule are being developed as the project moves forward.

UREX CONSTRUCTION OPTIONS

Question. We notice that most of the UREX facility dollars in 2006 and 2007 (~$200 million) will be spent on "conceptual" designs, EIS studies, procurement orders, and other "paperwork" similar to that involved with constructing large-scale integrated nuclear facilities.

Are there any "medium" scale options available that could employ existing processing lab capabilities that could be utilized to free up funds for the other critical elements of the program? If not, how do you assure that the EIS process does not have to be repeated over and over for each component of the emerging fuel cycle?

Answer. The Department is looking at conducting additional laboratory research at increased throughput quantities in fiscal year 2007 in parallel with the conceptual design activities for the engineering-scale facility.

The EIS process will consider all reasonable alternative technologies and locations for three key elements of the GNEP Technology Demonstration Program: (1) demonstration of advanced spent fuel separations processes; (2) demonstration of a conversion of transuranics; and (3) demonstration of an advanced fuel cycle facility and advanced fuel fabrication.

IRAN—PURSUIT OF A COMPLETE FUEL CYCLE

Question. Iran has decided to build and operate a uranium enrichment plant in direct violation of Nuclear Non-Proliferation Treaty. Obviously, with this capability Iran could not only produce fuel for civilian purposes, but weapons activity as well. Your plan calls for a uranium fuel-leasing plan that would provide fuel to countries interested in developing a civilian nuclear program.

Do you believe countries would be willing to contract for enrichment services instead of developing their own domestic capability? How has this plan been received by other countries?

Answer. Today there are countries that rely on contracted enrichment services rather than developing their own domestic capability. Long-term contracts and enrichment facilities in over a half dozen countries provide alternative sources of supply. The United States itself contracts over half of its annual fuel services from Russia through the U.S./Russia HEU Purchase Agreement.

We recognize that some countries will be mindful of supply security under the GNEP approach. The United States has already committed 17 metric tons of HEU that will be blended down to LEU and used to establish a fuel reserve to back-up supply assurances. Russia has indicated support for such an approach. We are approaching other countries to establish interim supply arrangements to increase the confidence that critical energy supply would not be subject to near-term political tensions.

Question. What is the Department's plan to bring our international allies on board with the Global Nuclear Energy Partnership (GNEP)?

Answer. The United States has been meeting with potential international partners to discuss both policy and technical aspects of GNEP. We will continue our diplomatic and technical outreach with a broader group of prospective partners.

Question. What international commitments has the department obtained regarding GNEP?

Answer. The United States completed initial consultations with fuel cycle countries and the International Atomic Energy Agency on the key objectives of GNEP. From a technical perspective, France, Japan and Russia have expressed strong interest in cooperative R&D.

GNEP—NONPROLIFERATION

Question. The GNEP program is a comprehensive R&D program that includes work on advanced reactor technology, fuel recycling, waste reduction, a global nuclear fuel service, small reactors, and enhanced nuclear safeguards. However, the budget request focuses on large-scale engineering demonstrations of fuel recycling capability, with minimal involvement outside the Office of Nuclear Energy. It is unclear from this budget when the Department will undertake research reliable fuel services, small scale reactors, enhanced nuclear safeguards and basic R&D that could address a number of concerns related to our national security in the early phases of the program.

Why has the Department elected to minimize the direct and immediate engagement of the NNSA and the Department of State at the onset of GNEP?

Answer. Senator, as the principal official within the Department with responsibilities for advancing GNEP, I know that all appropriate elements of the Department were fully engaged during GNEP planning. In particular, Ambassador Brooks and the National Nuclear Security Administration (NNSA) staff played an integral role in the development of GNEP, in participation of addressing non-proliferation and the development of an advanced generation of safeguards technologies. This role will continue in the future.

The Department of State has also been engaged from the beginning of GNEP planning and involved in all aspects of developing our international partnership. As you may be aware, prior to the President's announcement of the Advanced Energy Initiative and GNEP, Under Secretary of State Robert Joseph and I led a delegation to several foreign capitals to present GNEP. This is but one example of our close cooperation with the Department of State in both the development of GNEP and corresponding diplomatic strategy. I can assure you that the Departments of Energy and State continue to be engaged in coordination of our activities to advance GNEP.

ADVANCED BURNER REACTORS

Question. The United States and the world have past experience with fast reactors that have led to questions about cost of operations and the potential proliferation threat. What will be the focus of advanced burner reactors and how will it address past concerns?

Answer. The focus of the advanced burner test reactor will be to demonstrate the capability of destroying transuranic elements (which include plutonium) with repeated recycle. The advanced burner test reactor will incorporate the very latest in safety and security features.

MOX PROGRAM

Question. Mr. Secretary, I am very concerned about the MOX program. This nonproliferation initiative uses the existing French recycling technology to fabricate nuclear fuel using a mixture of weapons grade plutonium (5 percent) and uranium (95 percent) to be burned in a civilian reactor. This program, when fully realized will destroy 68 tons of plutonium in the U.S. and Russian stockpiles. Can you please update the committee on the status of this program and the status of the liability agreement with Russia?

Answer. The Department of Energy has made significant progress in implementing the plutonium disposition program in the past year. The United States and Russia successfully completed negotiations of a liability protocol for the plutonium disposition program last summer. The protocol is currently under final review within the Russian Government. Senior officials from the Russian Ministry of Foreign Affairs and the Russian Atomic Energy Agency have assured us that there are no substantive issues with the agreed language and that it will be signed in the near future. In addition, the Department received authorization to begin construction of the MOX facility from the Nuclear Regulatory Commission, began irradiation of MOX fuel lead assemblies in a nuclear reactor, and began site preparation work at the Savannah River Site. Current plans call for construction of the U.S. MOX facility to start in 2006. To support this effort, the Department has been working on validating the U.S. MOX project cost and schedule baseline as part of our project management process and will have a validated baseline in place by the end of this year consistent with the requirements in the Defense Authorization Act for Fiscal Year 2006.

RISK INSURANCE—EPACT 2005

Question. The Energy Policy Act (EPACT) of 2005 authorized the Department to establish a risk insurance program that would compensate utilities if the Nuclear Regulatory Commission fails to comply with specific schedules or reviews or if litigation delays full operations. The Department has provided just $2 million to support the establishment of the program regulations.

What is the timing of standby support program? When will the regulations be finalized and the program become operational?

Answer. The Department is developing a rule for implementing the standby support or Federal risk insurance provisions of EPACT. The rulemaking is scheduled to be completed by August 2006 in accordance with the requirements of EPACT. The Department issued the interim final rule on May 8, 2006.

GLOBAL RISK LIABILITY PROTECTION

Question. Part of the GNEP plan is a global nuclear solution and international collaboration on new advanced reactors. The administration has negotiated the Convention on Supplemental Compensation for Nuclear Damages in 1997 and submitted it to the Senate in 2002. This program is an international liability standard similar to Price Anderson. The Senate Foreign Relations Committee held hearings in 2005, but no action has been taken. I am told that most U.S. nuclear companies are very reluctant to embark upon foreign work without such a liability agreement in place.

Has the administration considered the impact that a lack of an international regime on nuclear liability will have on their international nuclear initiatives, such as GNEP?

Answer. Nuclear liability comes up as an issue in connection with almost every nuclear project outside the United States—whether it is a commercial project in which a U.S. nuclear supplier wants to participate or a DOE activity undertaken by a contractor. The United States has sought since the early 1990's to address these concerns in a comprehensive manner through the establishment of a global nuclear liability regime that includes the United States. These efforts culminated in the adoption of the Convention on Supplementary Compensation for Nuclear Damage (CSC) in 1997 at a Diplomatic Conference under the auspices of the International Atomic Energy Agency (IAEA). The United States was the chief proponent of the CSC since it is designed to address U.S. concerns over nuclear liability in a manner that will not require the United States to make any substantive change in our domestic nuclear liability law (the Price-Anderson Act). Bringing the CSC into

effect will establish a well-defined legal framework for dealing with nuclear liability issues in a manner that facilitates participation by U.S. firms in nuclear projects (including those associated with GNEP) and, in the unlikely event of a nuclear incident, provides for assured, prompt and meaningful compensation with a minimum of litigation.

The administration strongly supports ratification of the CSC by the United States and other countries as soon as possible. The administration has submitted the CSC to the Senate for advice and consent and has indicated that favorable action early this year is a high priority. The administration also has been working with the IAEA to promote ratification of the CSC by other countries. In particular, the Department represents the United States on INLEX, the IAEA's group of nuclear experts, whose mission includes promoting broad adherence to the CSC. In addition, the Department participated last November in an IAEA forum in Australia to promote ratification of the UCS by Pacific Island and Asian countries and will participate in a similar forum for Latin American countries later this year.

UNIVERSITY R&D PROGRAM

Question. This budget proposes to eliminate the funding for University programs to support nuclear education and encourage students to focus on nuclear related disciplines which have civilian and defense capabilities. You might be interested to know that the Nuclear Regulatory Commission, following authorization of EPACT, did include funding in its budget to develop an academic capability needed to perform oversight responsibilities.

Why do you believe there is a policy disconnect between the NRC and the DOE when it comes to supporting nuclear education?

Answer. We do not believe there is a policy disconnect between NRC and DOE. The NRC's support to universities is for the purpose of attracting engineering students to the NRC for employment opportunities. The DOE objective was to address the issue of declining student enrollments in, and closure of, university programs during the 1980's and 1990's. Over the last few years, there has been a significant increase in student enrollments in nuclear engineering programs, achieving the Department's goal of enrollments of 1,500 students. During the same time, the number of nuclear engineering programs in the United States has increased as well. We believe that a strong nuclear engineering education infrastructure is in place and that the efforts of the universities and industry as well as continued demand for nuclear engineers will sustain enrollments and nuclear engineering programs.

While the Department of Energy has not requested specific funding for the University Reactor Infrastructure and Education Support Program, we will continue to fund research at nuclear engineering schools through our directed research programs and awarded through the Nuclear Energy Research Initiative. In May 2006, the Department anticipates issuing a solicitation to universities requesting proposals for participation in the Office of Nuclear Energy's research and development. In addition, we anticipate continuing fellowships to graduate students pursuing advanced degrees in transmutation and other highly specialized fields associated with the fuel cycle.

NUCLEAR POWER FOR TRANSPORTATION FUELS

Question. GNEP is focused on enabling nuclear power for electricity generation. However the transportation sector is the largest consumer of energy in the country. With GNEP's emphasis on fuel recycling and fast-neutron burner reactor development, I am concerned support for high temperature reactors that are effective in producing hydrogen for transportation will be overlooked or forgotten entirely. For example funding for nuclear hydrogen research has been reduced from fiscal year 2006 levels.

How do we ensure that we don't abandon the research needed to produce transportation fuels with nuclear energy and support a balanced approach to solving our dependence on foreign oil?

Answer. The Department has not abandoned research needed to produce transportation fuels with nuclear energy. Authorized by the Energy Policy Act of 2005, the Next Generation Nuclear Plant program is on track to meet the 2011 date to select a technology best suited to apply heat and/or electricity to produce hydrogen at a cost competitive with other transportation fuels.

GNEP REGULATION

Question. I understand the DOE plans to "self-regulate" the facilities that will be developed to conduct research and development. Ultimately a commercial-scale facil-

ity will be developed, assuming the research is proven, and the NRC will need to perform the ultimate licensing of such a facility.

As you may know, the NRC has not requested any funding to support the GNEP program—has an agreement been reached with the NRC that defines their involvement?

Answer. DOE would conduct the GNEP technology demonstration program under authority granted by the Atomic Energy Act. However, DOE would propose to engage the Nuclear Regulatory Commission (NRC) throughout the technology demonstration phase to ensure that the technologies are licensable by NRC when they are deployed commercially.

YUCCA MOUNTAIN OPTIONS

Question. Because of the large volume of spent nuclear fuel already produced and the large infrastructure of treatment facilities and burner reactors needed to deal with it, the GNEP program will take several decades to have any impact on our high level waste problem. There are a variety of opinions on Yucca arguing for delay in licensing Yucca Mountain, even though a repository for high level waste will be needed with or without GNEP. Others say that Yucca Mountain is needed right away for Navy fuels and to dispose of high level waste now stored at many DOE facilities from our cold war weapons program. Still others say that GNEP may fail and so the United States must actively pursue Yucca Mountain for spent nuclear fuel to ensure that we do not foreclose that disposal option.

What is your view on this and the approach we should take with Yucca Mountain?

Answer. The country needs Yucca Mountain under any fuel cycle scenario and this administration is committed to the successful licensing and operation of the site. Even with a fully successful GNEP development and implementation, the residues from the recycling process will still need geologic disposal. In addition, approximately 13,000 metric tons of Department of Energy (DOE) vitrified high-level waste and DOE spent nuclear fuel could not be recycled and still requires a repository. Moreover, the applicability of GNEP technologies for commercial spent fuel over 15 years old is still uncertain. The government has the obligation to take and dispose of the Nation's waste, and our mission is to provide permanent geologic disposal under the Nuclear Waste Policy Act of 1982. We need to start fulfilling that responsibility now with respect to the 50,000 metric tons of commercial spent fuel already generated and the additional 2,000 metric tons being generated annually.

While the potential waste minimization benefits of GNEP on Yucca Mountain would be profoundly positive, any changes to the operation of the Yucca Mountain repository would occur only after GNEP technologies have been adequately demonstrated. Today, there will be no changes in the license application under development and we will proceed with our current plan for the existing waste inventory as well as the waste being generated.

LEGISLATIVE REFORMS

Question. The administration is preparing a package of legislative reforms modifying the authorization for Yucca Mountain. Among the many modifications, the proposal seeks to stage the emplacement of spent fuel to allow it to cool.

How will this strategy impact long-term storage and how will it be coordinated with the GNEP recycling efforts?

Answer. Repository designs have consistently included aging capability needed to allow the spent fuel received from the utility sites to cool until it is suitable for permanent underground disposal. These aging facilities are an integral part of our disposal operations. Although GNEP offers the promise for a more efficient fuel cycle in the future because it generates a lower volume of waste, there are no current plans to store existing spent fuel for the possibility of recycling it in the future.

Question. Can you please explain why the Department has decided to make these modifications to the Yucca Mountain project now and what impact this will have on schedule and budget estimates?

Answer. Since the Department had always intended to have spent fuel aging capability deployed at the repository, the availability of early spent fuel aging facilities would not impact current repository planning. Cost and schedule development is currently underway for the clean-canistered approach to repository waste receipt announced last October, and will be available later this year.

WASTE CONUNDRUM

Question. As you are probably aware the construction of 19 new reactor projects are under discussion and this will add to the existing large volume of waste waiting

final disposal. By 2010, the amount of spent fuel stored at reactor sites across the country will exceed the statutory limit of 70,000 tons of spent fuel that can be placed in Yucca Mountain. If the NRC agrees to extend the license of all existing reactors this will generate up to 120,000 tons of spent fuel, which is the "technical" capacity of the mountain. This doesn't begin to address spent fuel generated from new reactors.

If we do not address the large growing volume of spent fuel through a waste reduction strategy proposed through GNEP, how will we deal with all the spent fuel?

Answer. If the volume reduction benefits of GNEP are not realized, it will be necessary for the Department to develop additional repositories to deal with all the spent fuel that is expected to be generated by the current fleet of reactors as well as the additional new reactors currently being considered. Removing the statutory limit of 70,000 metric tons currently imposed on disposal at Yucca Mountain will temporarily delay the need for the next repository. The combination of waste minimization and removing the 70,000 metric ton limit could delay the need for another repository until the next century.

INTERIM STORAGE

Question. Some have proposed that we move our spent fuel to a central interim location, or locations, until it can be processed in a recycle facility. Others fear that once moved, the fuel will remain there forever, especially if recycling proves to be technically impossible or commercially unviable.

What assurances could be provided to a host community for temporary storage that it won't be stuck with the fuel from a hundred reactors forever?

Answer. The Department has made no decisions regarding the timing for receiving spent fuel for recycling, or the locations at a recycling site where the spent fuel would be recycled. It is anticipated that the approach to receiving spent fuel will be examined as part of the project definition and conceptual design phase that will occur over the next 2 years.

Question. In the fiscal year 2006 Conference Report Congress directed the Department to develop an interim storage plan and provide grant funding to communities interested in locating such a facility in their area. There are communities in my State that are very eager to work with the Department and to initiate the siting process. When will the Department complete its plan for the interim storage facilities and when do you expect to release the funds to interested communities? What direction will you give these communities on the expenditure of these funds?

Answer. The fiscal year 2006 Conference Report directed the Department to address the development of an integrated spent fuel recycling facilities. The Department received over 30 responses from public and private sector interests in response to a Request for Expressions of Interest issued in March 2006 for hosting advanced recycling facility demonstrations. The Department expects to issue a Request for Proposals later this spring and award contracts this year to conduct site evaluation studies. The Department has initiated an Environmental Impact Statement for the GNEP Technology Demonstration Program that will consider locations for siting the integrated recycling demonstration facilities. The results of the site evaluation studies will help inform the evaluation of potential locations. At this time, the GNEP Technology Demonstration Program does not contemplate a dedicated interim storage facility for spent fuel.

GNEP—ENGINEERING DEMONSTRATION

Question. GNEP is focused on a near-term visible demonstration of the closed fuel cycle and has chosen the Engineering Scale Demonstration (ESD) at the Savannah River Site in South Carolina (SRS). However, before the Department proceeds with the construction of the UREX+ demonstration to recycle fuel it is important that the Department is able to confirm that the fuel itself can be manufactured and qualified in a reactor.

Before the Department undertakes a complicated construction project, are you absolutely confident that this technology will deliver a product that can be used and safely disposed in a fast reactor?

Answer. No decision has been made regarding the location or locations for the GNEP technology demonstration projects. Technical challenges do exist in the areas of the separation of spent nuclear fuel, manufacture of new fuel from recycled products, and the destruction of the long-lived radioactive materials in a nuclear reactor. These challenges will be addressed both through continued applied research and the new demonstration facilities.

Question. Without a fast reactor available in this country, how will you test and qualify the fuel to determine whether or not you have a viable product?

Answer. The transmutation fuels could be tested and qualified in existing fast reactor facilities which are available internationally in Japan, France, and Russia.

DOE—COLLABORATIVE R&D

Question. Traditionally, the Department hasn't always been successful in fostering cooperative research among the offices within the Department. There are relevant projects across the different repository, nuclear energy, science, and non-proliferation programs that can be integrated to take advantage of complimentary assets and related developments. For example, the NNSA has started constructing new MOX fuel production and fabrication facilities.

How will these parallel efforts be used to accelerate the GNEP program?

Answer. The Office of Nuclear Energy is the lead office for managing the GNEP program. In this capacity, NE will work with all of the relevant program offices, including the Office of Civilian Radioactive Waste Management, which has primary responsibility for the geologic repository; the Office of Science, which will be involved in simulation, research and development; and the National Nuclear Security Administration, which will serve a key role in developing advanced safeguards for the advanced recycle facilities. The Department will seek to ensure that the lessons learned for the NNSA MOX program are appropriately applied to the GNEP program.

RELIABLE FUEL SUPPLY

Question. GNEP has proposed that the United States and several other countries should join together to supply nuclear reactors and fuel to the rest of the world. Late last year, the Secretary committed to down blend 17.4 tons of highly enriched uranium to establish the initial supply of available fuel. The budget documents are unclear as to how the cost of down blending the fuel will be paid and the timetable and terms of this activity. In addition, it is unclear if the Department has the authority to undertake this activity. Can you please provide for us a budget and schedule for the down blending activities and identify the existing authorities the Department will use to down blend this material in order to establish a Reliable Fuel Supply.

Answer. The HEU is to be down blended at a commercial facility in the United States that will be selected through a competitive procurement. The current schedule is to issue a request for proposals in April 2006, award a contract this summer, and begin shipments of HEU to the winning bidder by the end of the fiscal year. Shipments will continue through fiscal year 2008. Down blending of the HEU at the commercial facility is to be completed by the end of 2009.

Funding is needed to recast metal at Y–12 National Security Complex into a form suitable for shipment to the down blending contractor, package the HEU for shipment to the contractor, and develop and procure new shipping casks. The funding estimate for this work is approximately $9 million in fiscal year 2006, $15 million in fiscal year 2007, and $8 million in fiscal year 2008. However, the Department of Energy proposes that the cost of down blending, including chemical processing to remove non-uranium constituents and procurement in the market of natural uranium blend stock, be paid for by allowing the contractor to retain a fraction of the resulting LEU. It is estimated that it will take approximately 70 MT of LEU ($130 million at current prices), leaving approximately 220 MT available for the Reliable Fuel Supply.

The Secretary has authority under the Atomic Energy Act of 1954 (AEA) and the USEC Privatization Act to enter into barter transactions with regard to uranium. Under section 3(d) of the AEA, the Secretary is to effectuate programs that encourage the "widespread participation in the development and utilization of atomic energy for peaceful purposes." Under section 54 of the AEA the Secretary is authorized to export special nuclear material, including enriched uranium, under the terms of an agreement for cooperation arranged pursuant to section 123 of the Atomic Energy Act, consistent with the requirements of section 3112 of the USEC Privatization Act. Under section 55 of the AEA the Secretary is "authorized, to the extent [he] deems necessary to effectuate the provisions of this Act" to purchase or otherwise acquire special nuclear material. Section 3112(d) of the USEC Privatization Act authorizes the Secretary to "sell natural and low-enriched enriched uranium (including low-enriched uranium derived from highly enriched uranium) from the Department of Energy's stockpile" where determinations are made that the material is not necessary for national security needs and that the sale will not have an adverse material impact on the domestic uranium market, and where the price paid is not less than the fair market value of the material. The HEU in question was declared excess to national security in 1994. The Secretary signed a determination that this

activity would not have an adverse material impact on the domestic uranium industries on November 4, 2005.

QUESTIONS SUBMITTED BY SENATOR THAD COCHRAN

CONSTRUCTION OF NEW NUCLEAR POWER PLANTS

Question. Congress has consistently supported the administration's efforts to promote the use of safe and clean nuclear energy. In last year's appropriations bill, this committee provided even more funding than was requested by the Department. Also last year, the Senate, under the leadership of Chairman Domenici, passed landmark energy legislation, including a provision requested by the administration to provide additional incentives, including risk insurance, for new commercial nuclear power plants. My State is a leading site to host a new commercial nuclear power plant, which will not only provide jobs and stimulate economic development, but also could provide future rate relief to my State's electricity consumers, by relieving some of the burden of high cost natural gas currently used to generate electricity.

Within the context of the proposed Global Nuclear Energy Partnership, does the administration remain strongly committed to fostering the development of new commercial nuclear power plants in the United States?

Answer. The administration is and remains strongly committed to the development, licensing, and deployment of new nuclear power plants in the United States. GNEP will build on the recent advances made by the President and Congress to stimulate new nuclear plant construction in the United States. This will be accomplished by demonstrating the success of the streamlined regulations for siting, constructing, and operating new nuclear plants through the Nuclear Power 2010 program, and by implementing incentives enacted by the Energy Policy Act of 2005 (EPACT 2005). The Nuclear Power 2010 program is a high priority at the Department of Energy for the near-term deployment of new nuclear power plants. This key program is the joint industry and government collaborative effort to address the barriers to deployment of new nuclear power plants in the near-term.

NUCLEAR POWER 2010

Question. Why does the budget propose to reduce funding for Nuclear Power 2010 program, which is the principal DOE program to support the deployment of new commercial nuclear power plants on a fast track?

Answer. The proposed budget for the Nuclear Power 2010 program was reduced due to the projected uncosted fiscal year program carryover into fiscal year 2006 and fiscal year 2007. Uncosted carryover can be attributed to the delay in initiation of the two New Nuclear Plant Licensing Demonstration projects with NuStart Energy Development LLC and Dominion Energy, the slower than expected ramp-up by one reactor vendor and an additional $10 million fiscal year 2006 appropriations over the budget request.

Although we are optimistic that the industry will be able to move work forward and accelerate project spending; we believe that with these uncosted balances the work that needs to be done to keep these projects on schedule will be able to be accomplished.

Question. Isn't this posture inconsistent with the plans and the significant budget increase requested for GNEP?

Answer. The reduced fiscal year 2007 budget request for the Nuclear Power 2010 program is consistent with the originally planned work scope taking into consideration prior year carryover. The overall goals and outcomes of the Nuclear Power 2010 program will support the overall GNEP plan.

Question. If this committee decided to restore the proposed funding cutback for the NP2010 program, would this not enable the Department to work with industry nuclear power plants?

Answer. The President's budget request for the Nuclear Power 2010 program will support the project activities as originally planned considering the program carryover expected at the end of fiscal year 2006.

YUCCA MOUNTAIN

Question. Yucca Mountain is critical and the Global Nuclear Energy Partnership program must always keep Yucca Mountain as a critical component. Please elaborate on your testimony on the ways we need to move forward with the licensing and construction of the Yucca Mountain repository regardless of GNEP.

Answer. The administration is committed to the development of Yucca Mountain with or without the Global Nuclear Energy Partnership (GNEP). Under any fuel

cycle scenario, there will be a need for Yucca Mountain for the permanent disposal of waste.

The Department needs to move forward with the licensing and construction of Yucca Mountain that embodies the Secretary's direction for safer, simpler, and more reliable operations. We need to ensure that the license application process is based on sound science and that we demonstrate through our actions that we have met the quality assurance requirements of a nuclear licensee. In that regard, the Department is conducting additional work for the submittal of the license application to address the amended draft Environmental Protection Agency Radiation Protection Standards to extend the period of compliance from 10,000 to 1 million years as well as accommodate clean-canistered approach to spent fuel handling operations. Additionally, the Department is working with the Nuclear Regulatory Commission (NRC), industry and the utilities to develop the specifications for a canister that can be added to the license application materials.

In order for the Department to receive a license from the NRC, it must demonstrate that it can operate under nuclear standards and requirements. This involves the establishment of a culture of credibility and integrity that earns respect regarding how it operates. We will also be investing significant time and resources in developing this culture.

QUESTIONS SUBMITTED BY SENATOR HARRY REID

ECONOMICS

Question. DOE repeatedly has stated that it is premature to develop a cost estimate for the GNEP program. But the National Academy of Sciences presented cost estimates in 1996 based on several different fuel cycles, including one based on actinide-burning fast reactors, and DOE developed a very detailed cost estimate for the Accelerator Transmutation of Waste program in 1999. If DOE believes that these estimates are no longer appropriate, why can't it show exactly why that is the case?

Answer. In 1996, the National Academy of Sciences (NAS) published a study entitled "Nuclear Waste: Technologies for Separations and Transmutation." This study was technically very complete, and incorporated most technical knowledge available at the time. Cost studies used data available in the early 1990's, in particular for the cost of construction and operation of large separations plants, and focused mostly on data from then recently-built reprocessing plants in Europe. Data available in 2006 is significantly different due to two factors: first, operational experience developed within the French program since that report was written indicates several ways to very significantly reduce the cost of reprocessing; secondly, data available from research performed under the auspices of the Advanced Fuel Cycle Initiative point to new technologies that will significantly reduce the footprint—and therefore the cost—of reprocessing facilities.

Furthermore, the NAS report was developed at a time when the prospect for nuclear energy growth was low, and when cheap oil was plentiful. Under these conditions, its cost analysis ignored several benefits of implementing separations and transmutation strategy, namely the possibility of avoiding additional repositories beyond Yucca Mountain, and the global peace dividend associated with a stable, proliferation resistant global nuclear enterprise.

The Department of Energy (DOE) study on the cost of implementing an Accelerator Driven Transmutation of Waste infrastructure, published in 1999, indicated very high costs associated with using an accelerator approach, which has since been abandoned in the United States, and has been seriously scaled back in Europe and in Japan. Both France and Japan are now proposing long term approaches similar to the technical approach proposed by the Global Nuclear Energy Partnership (GNEP) initiative.

A full lifecycle economic analysis for the technologies proposed within the GNEP program is underway.

Question. Given a flat budget overall for DOE, what related programs are you giving up to pursue this program?

Answer. In fiscal year 2006, Congress appropriated $79.2 million (which includes the across-the-board rescissions) for the Advanced Fuel Cycle Initiative (AFCI). The Department is requesting $170.8 million in new funding to accelerate efforts to develop and demonstrate the advanced recycling technologies. The funding request is part of a broader prioritization of DOE program activities affecting not just AFCI but other programs within the Department.

Question. What are the estimate costs according to the GEN IV program for the design of fast neutron reactors?

Answer. The Generation IV program does not have a specific cost estimate for the design of fast reactors. These costs will be estimated over the next 2 years as the Department prepares the conceptual design of the advanced burner reactor and works to develop a baseline schedule and cost for demonstration of the technology. Under the Advanced Fuel Cycle Initiative, the Department would propose to invest $25 million on the advanced burner reactor technology in fiscal year 2007. However, as with the design of any complicated system, more definitive estimates will be developed as the design details are developed.

In February 2006, the United States signed a Generation IV systems arrangement agreement with the Commissariat a L'Energie Atomique of France and the Japan Atomic Energy Agency to cooperate on the development of sodium fast reactors. It is anticipated that this agreement will establish the foundation for further collaborations on fast reactors with these countries, and others that are expected to join the agreement in the future, in support of GNEP.

Question. How many existing reactors in the United States could use MOX fuel? How many would require costly retrofits?

Answer. About 25 percent of the current light water reactors in the United States could use MOX fuel, while another 50 percent would require retrofits. The Global Nuclear Energy Partnership initiative does not propose to use MOX fuel; but would propose to develop a more advanced and proliferation resistant fuel.

Question. How much of the $250 million requested for fiscal year 2007 is new money, and how much is re-categorized spending?

Answer. The Global Nuclear Energy Partnership is a new initiative that proposes to accelerate work underway within the Department's Advanced Fuel Cycle Initiative (AFCI) to develop more advanced proliferation resistant spent fuel recycling technology. In fiscal year 2006, Congress appropriated $79.2 million (which includes the across the board rescissions) for AFCI. In fiscal year 2007, the Department has requested $170.8 million in new funding to accelerate development and demonstration of the advanced recycling technologies that are part of GNEP.

Question. What are your key technical hurdles to implementing a system of reprocessing? How confident are you that you can develop reasonable cost estimates for overcoming these hurdles (given the Department's poor track record on costing out large, complicated projects)?

Answer. The major technical challenges are in the areas of the separation of spent nuclear fuel and the manufacture of new fuel from recycled products. Both of these challenges will be addressed through continued applied research and technology development. The Department will conduct engineering design and environmental studies over the next 2 years that will support the preparation of baseline costs and schedules for the demonstration of the separations of spent nuclear fuel, burning of the transuranics, and the development of a fast burner test reactor. We are confident that the work and efforts will provide the required information to support these baselines.

INTEGRATED INTERIM STORAGE/REPROCESSING

Question. In DOE's budget request for the GNEP program, the following statement is made under the heading of "Detailed Justification" for "Systems Analysis":

"In fiscal year 2006, the Department will focus its systems analysis efforts on evaluating the integrated fuel cycle system it has chosen to demonstrate at engineering scale. It will develop a plan for integrating a spent fuel recycle capability with interim storage of commercial spent nuclear fuel and complete an assessment of the proliferation resistance of certain aqueous separations technologies. This 'Spent Fuel Recycling Plan' will be submitted to Congress as requested in the fiscal year 2006 Appropriations language."

Can DOE explain what is meant by "interim storage" in this context?

Answer. Interim storage refers to the range of possibilities of storage of spent fuel from the time it is discharged from a reactor until it is separated. The Department has made no decisions regarding the timing for receiving and storing spent fuel that would be incidental to recycling or the locations for the spent fuel recycling demonstration facilities. It is anticipated that the approach to receiving and storing spent fuel incidental to recycling will be examined as part of the project definition and conceptual design phase that will occur over the next 2 years.

Question. What sites are under consideration for such interim storage?

Answer. The Department is not presently considering sites to be used solely for interim storage as part of a recycle strategy. Future site evaluation studies will identify the sites to be considered for recycling demonstration facilities and will con-

sider the extent to which such sites have the capability to provide storage related to the recycling process.

Question. What criteria will you use for identifying potential sites?

Answer. The Department has not yet developed criteria that would be used to identify potential sites for spent fuel recycling demonstration facilities.

Question. Are foreign sites under consideration?

Answer. We do not anticipate using foreign sites to store U.S. spent fuel.

Question. What analysis will be made about the costs of interim storage on-site as compared with interim storage at Yucca Mountain as compared with pool or dry-cask storage at potential reprocessing sites?

Answer. The Department has not conducted analyses comparing costs of interim storage onsite to storage that is incidental to demonstration of advanced recycling technologies. The Department does not view process storage in connection with the GNEP Technology Demonstration Program as a means of fulfilling its existing responsibility to take and dispose of the spent fuel currently being stored at reactor sites.

SPENT FUEL RECYCLING PLAN

Question. What offices will lead on the production of this report in the DOE and what other offices within DOE or what agencies will be involved?

Answer. The spent fuel recycling plan will be developed by the Office of Nuclear Energy (NE). NE has the lead in developing and managing the Global Nuclear Energy Partnership initiative. NE is assisted by the Office of Civilian Radioactive Waste Management, which has primary responsibility for the geologic repository; the Office of Science, which is involved in simulation and basic research; and the National Nuclear Security Administration, which serves a key role in advancing non-proliferation, developing advanced safeguards for the recycling demonstration facilities, and in developing the fuel services component of GNEP.

Question. Will a "threat assessment" be a part of this plan?

Answer. The plan will identify what assessments must be done to enable recycling of spent fuel. Those assessments will cover safety, environmental, proliferation resistance, and physical protection of radioactive materials in accordance with laws, regulations, and DOE Orders.

Question. What opportunities for public involvement will be there in the drafting of this plan?

Answer. The Department anticipates delivering the spent fuel recycling plan to Congress by May 31, 2006. There will be extensive opportunities for public involvement in conjunction with the National Environmental Policy Act (NEPA) analyses of alternatives for facilities envisioned as part of the GNEP Technology Demonstration Program.

Question. In what ways will the DOE produce this report in order to ensure compliance with NEPA?

Answer. The Department remains committed to meeting the letter and the spirit of NEPA and will conduct a thorough review of the environmental impacts of appropriate alternatives. On March 22, 2006, the Department issued an Advance Notice of Intent (NOI) announcing its intent to prepare an Environmental Impact Statement for the GNEP Technology Demonstration Program. The Report to Congress is separate from this NEPA review and sets forth DOE's present vision for the GNEP Technology Demonstration Program.

Question. How will this assessment affect the continued preparations for opening Yucca Mountain?

Answer. The spent fuel recycling plan will articulate the Department's plan to demonstrate an integrated fuel cycle at a scale appropriate to determine the feasibility of full scale operations. The development and implementation of this plan does not affect the Department's continued preparation for licensing, construction and operation of Yucca Mountain. A geologic repository is a necessity under all fuel cycle scenarios, and the Department's budget request of $544 million relating to Yucca Mountain will allow us to make steady progress on Yucca Mountain. The administration is committed to begin operations at Yucca Mountain repository as soon as possible so that we can begin to fulfill our obligation to dispose of the approximate 55,000 metric tons of spent fuel already generated and the approximate 2,000 metric tons being generated annually. We have no plans to delay disposal of this spent fuel until full scale recycling facilities are available.

Question. To what extent will this report assess the economic implications of future fuel cycle activities?

Answer. The Spent Nuclear Fuel (SNF) Recycling Program Plan addresses the near-term costs of the GNEP Technology Demonstration Program. The report, which

is being provided to Congress in response to fiscal year 2006 Energy and Water Development (EWD) Conference Report language, does not assess the economic implications of the future fuel cycle activities or technologies. The report focuses on the demonstration of the advanced recycling technologies on a scale sufficient to evaluate potential commercialization of the technologies. System analyses are part of this plan as we go forward and will assess the full economic implications of advanced spent nuclear fuel recycling.

WASTE

Question. How much and what kind of waste would be produced by reprocessing? By transmutation?

Answer. The volume and quantities of waste from reprocessing and transmutation are not known in detail today, since they will depend not only on process design considerations but also on the results of tests performed with the GNEP demonstration facilities. For example, no one has operated a fast burner reactor with transuranic fuel and the technical results from engineering-scale treatment of that spent fuel for further recycle will be available for the first time in approximately 15 years. In the meantime, laboratory scale tests will be performed using irradiated specimens from foreign fast test reactors (PHENIX in France and JOYO in Japan). Regardless of the processes finally chosen, there will be no high level liquid waste products.

From the UREX+ separations plant, approximately 94 percent of the products will be highly purified uranium which will probably be stored for use as fuel in future fast power reactors. If it is judged to be surplus, it would be classified as a low level waste and disposed of by shallow burial. Approximately 25 percent by weight of the spent fuel going to a UREX+ plant is fuel cladding and end pieces. It will be compressed and disposed of as high level waste. A small amount of the cladding will be used to form an alloy with the fission product technetium for disposal in the same metal waste container.

The fission product iodine will be collected from the dissolver off-gas, placed in a stable waste form and placed in the repository. Cesium and strontium will be separated, converted to an alumino-silicate waste form and stored for approximately 200 years, by which time it will be a low level waste and disposed of by shallow burial. The remaining fission product, constituting approximately 5 percent of the spent fuel, will be mixed with borosilicate glass (with up to 50 percent of the final glass logs being fission products) and disposed of at Yucca Mountain.

The transuranics in the spent fuel, constituting approximately 1.1 percent by weight, will be blended with fresh make-up uranium and converted to fuel for the fast test reactor. Recycle through fast burner reactors will result in a small quantity of fission product and process losses being removed from the processing system each cycle. The material will be formed into an inert waste form for disposal. The total quantities will be a very small fraction of the quantity of spent fuel entering the UREX+ processing plant (which under the current once-through fuel cycle, would go directly to Yucca Mountain). Thus the overall quantities and heat loads of the final waste will be reduced greatly, allowing the technical capacity of the Yucca Mountain to be substantially increased.

Question. Does DOE envision inviting other countries that we don't want to reprocess to ship their spent fuel to the United States? Could DOE provide a list of the countries whose spent fuel we would be accepting and reprocessing?

Answer. We do not envision accepting spent fuel pursuant to the GNEP vision until there is sufficient advanced recycling capability available in the United States. At that time, we would have to consider the conditions under which the United States would reprocess another country's spent fuel. To meet nonproliferation objectives, the United States currently receives U.S.-origin Highly Enriched Uranium spent nuclear fuel from foreign research reactors. Additionally, the United States has from time-to-time received spent fuel from another country to achieve nonproliferation and other Departmental missions.

PAST REPROCESSING RECORD

Question. Given that the United States has built three commercial reprocessing plants and none of them have worked, would there not be a danger that the reprocessing site would be turned into an interim storage site? (Indeed, that is exactly what happened to the reprocessing plant that GE built but never operated in Illinois.)

Answer. Recycling of commercial spent fuel in the United States was ended in 1977 by Presidential order. Commercial reprocessing had been carried out from 1966 to 1972 at West Valley, New York, at which time the plant was shut down

for modifications based on increased Nuclear Regulatory Commission (NRC) safety requirements. The combination of the Presidential Order and modification costs resulted in a decision to end the plant's operations. Two other commercial reprocessing plants (Morris, Illinois and Barnwell, South Carolina) were built but never operated with radioactive materials. Decreasing costs of low-enriched uranium have discouraged private investments in spent fuel reprocessing, particularly since the Federal Government assumed full responsibility for spent fuel management with the passage of the Nuclear Waste Policy Act in 1982 (as amended in 1987).

The Department intends to carry out the GNEP initiative in an orderly manner over several decades with the goal of having in place an immensely more efficient fuel cycle in the future. The first phase is the demonstration of technical feasibility over the next decade. If the technologies are shown to be technically feasible, then the Department will seek to promote their deployment in a manner that is commercially viable.

The Nuclear Waste Policy Act constrains the extent to which the Department can undertake interim storage and the administration's recently proposed amendment to the Nuclear Waste Policy Act did not include provisions related to interim storage of commercial spent fuel. However, we understand there are some members of Congress who are interested in pursuing interim storage as a temporary means of managing spent fuel while Yucca Mountain and recycling technology are being developed. Regardless, two conditions must be met. We must continue to ensure that Yucca Mountain is available regardless of fuel cycle scenario and regardless of the way the Department proposes to manage spent fuel, pending its disposal.

FAST REACTOR RECORD AND SAFETY

Question. What are the safety risks of sodium-cooled reactor as opposed to a thermal water cooled reactor? Please describe the incidents that have occurred related to sodium cooled reactors.

Answer. Both technologies are extremely safe. This conclusion is based on decades of operating experience with light water reactors and from large-scale demonstrations of sodium-cooled reactors in several countries. With respect to sodium-cooled reactors, these include:

—More than 30 years experience with the French 560 MWt Phenix fast reactor;
—30 years experience in the United States with the EBR–II fast reactor;
—30 years experience with Japan's 100 MWt Joyo fast reactor;
—30 years experience with Russia's 1000 MWt BN 350 reactor;
—25 years experience with Russia's 1470 MWt BN 600 reactor;
—13 years experience in the United States with the 400 MWt Fast Flux Test Facility; and
—13 years experience with France's 2900 MWt Superphenix reactor.

Phenix and EBR–II have had issues involving such things as minor sodium leaks, but there have been no nuclear-related accidents at either of them.

In addition, the passively safe design features that have been demonstrated in sodium-cooled reactors will provide an added layer of safety to Advanced Burner Reactors (ABRs). ABRs will undergo a safety review and certification process to assure safe operation.

PROLIFERATION CONCERNS

Question. Would it be possible, and if so, how hard would it be, for a country or terrorist group to extract pure plutonium from the proposed transuranic radionuclide mix (for example, in a glove box)? Could a process such as pyroprocessing be adjusted to provide more pure plutonium?

Answer. A country and a terrorist group represent two very different proliferation threats. In the case of a state actor, it has long been understood that radiation barriers provide no significant protection against chemical separation. Significant radiation barriers may provide protection against theft by sub-state actors depending upon the dedication of the sub-state group and the strength of the radiation field.

From a state, or sub-state perspective, significant shielded glove box facilities and supporting equipment would be required to separate a weapon-significant quantity of plutonium from the UREX+ product. These facilities are commonly co-located with or adjacent to hot cell capabilities since typical small laboratory-scale radiochemical operations usually involve a variety of different radiation fields and contamination hazards. A PUREX facility is designed to produce and isolate plutonium in a readily usable form; a UREX+ facility is not. Further processing of the product of a UREX+ facility would require access to shielded radiochemical facilities and technical expertise to separate the plutonium into a more readily usable form. A sub-state actor would have to secure both long term access to these facilities

and the radiochemical expertise required to perform the operations. Obviously, the state actor risks are higher in either case, since the resources of a state actor are significant in comparison with non-state adversaries. This is why IAEA safeguards are required on all non weapon state nuclear materials and facilities—including laboratory scale facilities. Reengineering a UREX+ facility could be detected by IAEA safeguards that are designed to detect such process modifications.

Pyroprocessing, by design, is not capable of making clean separations of plutonium. It is also a much more difficult technology to master than basic aqueous processes since it involves specialized high temperature molten salt and dry box hot cell facilities. As such, it is expected that proliferators will use simpler, less costly and proven aqueous technology, such as PUREX, to separate plutonium.

Question. It is vital to ensure that plutonium already separated by reprocessing is adequately secured against terrorist theft. What more should the U.S. Government be doing to ensure that nuclear stockpiles around the world are secure and accounted for and cannot fall into terrorist hands?

Answer. I share your concern that separated plutonium and other nuclear weapons usable materials currently available in civil nuclear programs around the world could fall into the hands of terrorists. For this reason, as part of NNSA's Global Threat Reduction Initiation (GTRI), NNSA has been working on an accelerated basis to ensure that highly enriched uranium and separated plutonium currently used in civilian applications around the world are subject to effective physical protection. Furthermore, GTRI is developing a path forward for recovering and dispositioning these nuclear weapons-usable materials to high security sites within the United States or within another GTRI partner country with excellent nonproliferation and nuclear security credentials. To that end, NNSA currently is negotiating with several countries that possess these vulnerable, high-risk materials to develop a plan for recovery and disposition that will reduce or eliminate the risk of theft or diversion of these so-called "gap materials" that pose a security concern to the United States and the international community.

Question. Dr. Finck of Argonne National Laboratories stated in his presentation before the Advanced Fuel Cycle Initiative's Semi-Annual Review Meeting in August of 2003, "Expect that proposed dual tier fuel cycle cannot be made intrinsically proliferation resistant." Why is UREX+ not considered proliferation-resistant? What are the issues here?

Answer. Dr. Finck's statement refers to "intrinsic" proliferation resistance. Intrinsic resistance is understood to mean the proliferation resistance of a system in the absence of any institutional, legal, or technical verification measures. The term "proliferation resistance" should not be confused with being "proliferation-proof." A system that is truly intrinsically proliferation proof would not require safeguards.

UREX+ is an aqueous separation method, and therefore it is possible to reengineer facilities and systems to separate plutonium. However, IAEA safeguards and other legal and institutional measures are significant "extrinsic" proliferation resistant features and would provide for the timely detection of tampering and re-engineering.

We do not anticipate technical characteristics alone make the UREX+ process immune to exploitation by would-be proliferators. That is why we are proposing as part of our GNEP proposal to consider future recycling only in a limited number of fuel cycle states that already possess reprocessing technology.

INTERNATIONAL CONCERNS

Question. Secretary Bodman, in a speech he gave on November 7, 2005, at the 2005 Carnegie International Nonproliferation Conference, said: "It is important to note that in addressing reprocessing—or recycling—technologies for dealing with spent fuel, we are guided by one overarching goal: to seek a global norm of no separated plutonium." and, "Regardless of whether one believes reprocessing has worked well in those nations where it is practiced, I think everyone would agree that the stores of plutonium that have built up as a consequence of conventional reprocessing technologies pose a growing proliferation risk that requires vigilant attention." Given these statements, is it correct to say that the United States will not support the reprocessing of U.S. origin and controlled spent fuel in any of the foreign reprocessing plants, other than those already in place, such as with Japan? Should the U.S. reconsider that agreement? Given these statements, can you explain why the French plutonium company AREVA has reportedly stated that it hopes to sign new reprocessing contracts covering U.S. spent fuel?

Answer. We have made no decisions regarding reprocessing of U.S.-origin spent fuel in foreign reprocessing plants. It is an issue that needs to be examined in more depth as we establish partner nations under the GNEP vision.

Question. Secretary Bodman has expressed doubt in the U.S. being able to afford to fulfill the GNEP vision by itself. Yet, for the near term the U.S. DOE strategy is to go it alone. What will be the schedule and pathway for intellectually and financially engaging international partners?

Answer. Earlier this year, the Deputy Secretary of Energy and Under Secretary of State consulted government officials in a number of countries including the United Kingdom, France, Russia, Japan and China, each of whom have large investments in the commercial fuel cycle. These discussions focused on the objectives of the Global Nuclear Energy Partnership initiative and there was general agreement on the objectives. Since then, we have continued diplomatic and technical outreach to these and other nations which would be prospective partners. The U.S. strategy is to work with international partners in developing these technologies. For example, in January the United States, France and Japan signed an agreement to guide the cooperation on the research and development of sodium cooled fast reactors, a reactor concept that is under consideration for the Advanced Burner Reactor.

NEXT GENERATION NUCLEAR PLANT (NGNP)

Question. With the new focus and funding drain due to GNEP, can the United States still afford to pursue a GEN IV plant that targets both electricity and hydrogen production?

Answer. The Department is committed to pursuing the research and development necessary to inform a decision in 2011 on deployment of the Gen IV technology. The Department has requested $23 million in fiscal year 2007 to keep the program on pace to support a fiscal year 2011 decision. Research underway includes development of coated particle fuel, qualification of high temperature materials for use in the reactor system, and development of analytical codes and methods to be used in assessing system performance. In addition, the very high temperature reactor technologies being investigated as the Next Generation Nuclear Plant could be among the concepts considered for deployment as small scale reactors under GNEP.

TIMING

Question. To date, UREX+ has been tested only on the gram scale, using technologies different than those that would be used for full-scale operation and separating a somewhat different set of materials than is now proposed—yet it is now proposed to use it for processing the 63,000 tons of commercial spent fuel slated for disposal in a geological repository, and perhaps more. Wouldn't it be wiser to wait until the technology has been further developed before proceeding to an expensive engineering-scale demonstration, and before choosing between this technology and other proposed separations technologies?

Answer. The separations technologies that the Department proposes testing have been studied for over 5 years and have been demonstrated at the laboratory scale in kilograms quantities. The Department believes that the UREX+ separations process is the best known and proven today. Only through proceeding with engineering scale demonstrations of the separations, fuels and reactor technologies will we learn the practicality and economics of deploying industrial scale facilities. Only by beginning these demonstrations now will we discover means to reduce their costs and deployment times. And only by beginning them now can we realistically expect them to be ready by the time they are needed in the future for commercial scale deployment.

Question. Why should we choose between potential reprocessing technologies in the next few years, rather than allowing whatever technologies appear to be promising to continue to develop? Are we in danger of choosing a technology because it can be made available sooner, forgoing technologies that may be more promising but may take longer to develop?

Answer. It is crucial that we start today to accelerate and demonstrate a more proliferation resistant fuel cycle—a fuel cycle for the future that can provide the benefits of nuclear energy to the world while effectively addressing civilian inventories of plutonium and reducing the quantity and toxicity of nuclear waste requiring a geologic repository.

Over the last 5 years, the Department has pursued development of various flow sheets for a more proliferation resistant separations technology. The Uranium Extraction Plus or UREX+ has been successfully demonstrated at the "laboratory scale".

REPROCESSING IN EUROPE (TRADITIONAL PUREX REPROCESSING)

Question. The concept of "recycling" conveys the notion that countries such as France and the United Kingdom re-use the plutonium as they go, but actually MOX

fuel is not made and used immediately. (Nor is the high-level liquid waste generated from reprocessing immediately vitrified; rather, it is stored in stainless steel tanks to cool.) More than 200 metric tons of commercial plutonium worldwide are separated and have not been used as MOX and the surplus is building up each year. Many reactors need costly modifications to use MOX and some reactors cannot be modified. There are about 80 metric tons of surplus plutonium at La Hague in France and similar amounts at Sellafield in the United Kingdom and about 40 metric tons in Chelyabinsk, Russia. The United Kingdom has no reactors that can use plutonium fuel and no operating MOX factory. How can the United Kingdom effort be described as a recycling program when the United Kingdom has amassed about 80 metric tons of civil weapons-usable plutonium and has no plan to use this material? (For Pu amounts reported to the IAEA—see INFCIRC 549, on IAEA web site). Why do we expect that the proposed program will be more successful in avoiding a buildup of the material separated by reprocessing?

Answer. The GNEP vision would pursue different approaches to avoid buildup of pure plutonium separated by reprocessing. Plutonium would not be separated by itself; rather, plutonium would remain mixed with other transuranic elements. The Advanced Burner Reactors would more quickly consume these transuranic elements (including plutonium) than the reactors that use plutonium-MOX. Finally, the United States would pursue a phased approach that would bring the transuranic products from UREX+ in equilibrium with the fuel needs for the demonstration of the advanced burner reactor.

Question. How much transuranic waste has been created by reprocessing in France and the United Kingdom, and how does it compare with the original spent fuel volume? Are the French planning to dispose of what they call "intermediate waste", including transuranic waste, generated from reprocessing (separate from the vitrified high level waste) in a deep geologic repository? How much of this waste will they have from reprocessing compared with the volume of spent fuel?

Answer. France and the United Kingdom do not have a geologic repository program and are developing long-term disposal plans that would address many different wastes, including vitrified waste. The structure of waste regulations in both countries differs from the United States and the volumes of waste generated would not be directly comparable.

Question. France uses plutonium fuel (MOX) in 20 out of 58 reactors, but the stockpile of civil plutonium continues to increase with no end in sight. How can this growing stockpile be presented as "recycling"? MOX fuel produces less than 10 percent of France's nuclear electricity, but an official French report indicates that it imposes about $1 billion per year in added electricity costs. Why does Electricite de France (EDF), the state-owned utility forced to use MOX fuel, place a negative value on plutonium they must take from the reprocessing company (Cogema)? Isn't the French reprocessing company almost wholly owned by the government (about 85 percent as of 2004)?

Answer. There are significant differences between the French approach to recycling and the approach being explored by the United States. The French MOX-recycling program is based on plutonium-only separation using PUREX and is aimed at obtaining modest energy recovery from that plutonium. The French program does not aim to maximize use of a geologic repository nor address repository costs in its current economics.

GNEP has a broad range of objectives, including decreasing inventories of weapons-usable material (whether in used fuel or already separated), avoiding separation of pure plutonium, incorporation of newest safeguard design techniques, and making more efficient use of the U.S. geologic repository at Yucca Mountain. While the French program focuses on plutonium, the GNEP addresses proposed technologies relating to plutonium, americium, curium, and neptunium, thereby increasing waste management benefits. Recycle and consumption of plutonium, americium and neptunium decrease the geologic heat load and long-term potential doses. Recovery of uranium, at the purity level equal to low-level waste, reduces the volume of the waste. If the GNEP technologies are successful, the residual waste would be put into a form that is more resistant to long-term leaching than once-through used fuel, further reducing the technical requirements for geologic repository design.

Question. The United Kingdom's THORP reprocessing plant, which reprocesses foreign light water reactor fuel, had a major accident which was discovered last year after several months (a leak of nuclear material onto the floor of one cell, due to a broken process pipe). The accident has resulted in the facility being shut down indefinitely, with the possibility that it might not start back up. The operators of this plant have asked the United Kingdom government to permanently close the plant, which has never been profitable. What is the risk of similar accidents and safety record in the United States if we pursue reprocessing?

Answer. The overall safety record of fuel cycle operations in the United States is excellent, and is the model that should be followed in evaluation of fuel cycle issues. The safety of U.S. operations routinely exceeds established industrial standards of the countries in which they are deployed. The lessons learned from the leak at THORP, as well as all other off-normal events, have been closely studied and are well understood. The facilities under the GNEP initiative would be subject to rigorous safety analyses and regulatory oversight.

ENVIRONMENTAL/NEPA

Question. What NEPA related requirements will have to be met in the course of developing GNEP in the next year/years to come?

Answer. On March 22, 2006, the Department issued an Advance Notice of Intent (NOI) for the GNEP Technology Demonstration Program. Over the next 2 years, the Department plans to develop an Environmental Impact Statement to assess the potential environmental impacts associated with the GNEP Technology Demonstration Program. At an appropriate point in the future, DOE will prepare a Programmatic Environmental Impact Statement to inform the ultimate decision of whether to proceed with potential future actions to encourage the commercial-scale deployment of proliferation-resistant GNEP Technology Demonstration Program technologies.

PUBLIC DISCLOSURE

Question. What was the nature of the briefings on GNEP given to and responses from the countries which have been briefed on this program? What companies were briefed as part of those briefings? And which U.S. companies have been briefed?

Answer. Briefings by the U.S. Government on GNEP have proceeded with a variety of countries. Prior to the February 6, 2006 public announcement of GNEP, the administration consulted with officials from the United Kingdom, France, Russia, Japan, China and the International Atomic Energy Agency (IAEA), and the GNEP vision was well received in each case. These were government-to-government meetings. Part of the consultation with the officials from France included a meeting with representatives from Areva. Further technical discussions on areas for technology partnership are ongoing.

Shortly after the February 6, 2006 announcement of GNEP, a cable was sent to all diplomatic posts providing information on GNEP. Government delegations from Canada, the Republic of South Korea, and Indonesia were briefed at their request. In addition, many science counselors from embassies that expressed interest in learning more about GNEP from Europe, Asia, Latin America and Africa were briefed in Washington. In March 2006, the IAEA Board of Governors was briefed, including representatives from nearly 40 countries. The response to the briefings reflected interest.

Since the announcement of GNEP, the Department has provided briefings on GNEP to the U.S. nuclear industry through the Nuclear Energy Institute, and the National Association of Regulatory Utility Commissioners. The Department has held discussions with a number of U.S. utilities and nuclear suppliers that might have an interest in GNEP. The GNEP vision also has been discussed with representatives of foreign government-owned nuclear companies or their American affiliates at conferences or meetings on related matters (e.g., Generation IV).

Question. Former Secretary of Energy Spencer Abraham has been named Chairman of Areva, Inc. in the United States. As the French company Areva strongly supports the development of reprocessing and favors reprocessing U.S. spent fuel in France, do any conflict of interest laws apply, and has Secretary Abraham lobbied the Department of Energy on this issue?

Answer. Former Secretary Spencer Abraham terminated his Federal service on January 31, 2005. He continues to be subject to the post-employment restrictions of 18 U.S.C. 207(a). That section prohibits, in part, a former employee from knowingly making, with the intent to influence, any communication to or appearance before any employee of any department, agency, or court of the United States on behalf of any other person in connection with a particular matter involving a specific party, in which the former employee participated personally and substantially as an employee of the government. That section also prohibits, a former employee from knowingly making such communications or appearances when the former employee knows or reasonably should know that the particular matter involving a specific party was actually pending under his official responsibility within a period of 1 year before the termination of his Federal service. Former Secretary Abraham is no longer subject to a number of other post-employment restrictions that ended 1 year after his Federal service terminated.

To the best of my knowledge, former Secretary Abraham has not lobbied the Department on behalf of Areva, Inc.

SUBCOMMITTEE RECESS

Senator ALLARD [continuing]. So we can move forward with our deliberations.

And, without any more questions, I now declare the subcommittee in recess.

[Whereupon, at 4:05 p.m., Tuesday, March 2, 2006, the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER, AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 2007

TUESDAY, MARCH 28, 2006

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 10:01 a.m., in room SD–138, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman) presiding.

Present: Senators Domenici, Craig, Allard, Johnson, and Inouye.

DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

STATEMENTS OF:

MARK LIMBAUGH, ASSISTANT SECRETARY FOR WATER AND SCIENCE, DEPARTMENT OF THE INTERIOR

JOHN W. KEYS III, COMMISSIONER, BUREAU OF RECLAMATION

STATEMENT OF SENATOR PETE V. DOMENICI

Senator DOMENICI. Good morning. Today the subcommittee is going to take testimony on the fiscal year 2007 budget request for the Bureau. Our panel will consist of the witnesses from the Department of the Interior and the Bureau of Reclamation. Testifying for them will be Mark Limbaugh, Assistant Secretary for Water and Science; and John W. Keys, III, Commissioner of Reclamation. Commissioner, it is great to have you before us. We understand that after this series of hearings over time that this may be your last. You will be missed. It has been a good stay. We hope you have enjoyed it. Things have been tough at the Bureau, but we are in transition.

Thank you for appearing. I understand that the Bureau is considering that your effective retirement time would be next month. Is that correct?

Mr. KEYS. Mr. Domenici, that is correct.

Senator DOMENICI. So certainly this is your last appearance here. Again, thank you for your many years of service to the Federal Government. Second, I want to wish you a very long and happy retirement.

Now to the business at hand. The fiscal year 2007 budget request for the Bureau totals $971.6 million, a decrease of nearly $50 million from 2006, at least the enacted level of 2006, which was

$1.0208 billion, a 9.5 percent decrease. That is a pretty steep decrease. This is partially offset by discretionary receipts of $33.8 million from the Central Valley Project Restoration Fund and an $88 million rescission of unobligated balances for At Risk Desert Terminal Lakes.

Highlights for the budget include, as we see it: $14.5 million for Water 2025, a $9 million increase for fiscal year 2006 level increase in that project. This initiative seeks to make water more available in reclamation States through enhanced conservation. Clearly, the money does not match up with the size of the problem, but in this tight budget year I do not know where it does.

Fifty-seven million dollars, another item, is a $2 million increase from 2006 for the Animas-LaPlata. Funding will be primarily provided for the continued construction of the Ridges Basin Dam and Durango pumping plant. If I am wrong on any of these, I would hope you would take note and note it in your comments to us. However, it is my understanding that an additional $12 million is needed to maintain that schedule and we will work on that with you.

Thirty-eight-point-six million dollars for CALFED. That is a $2 million increase from 2006. The funds will be used for environmental water account, storage feasibility studies, conveyance studies, and some other items.

One hundred twenty million dollars for operating, managing, and improving California Central Valley Project. This is a $9 million increase over 2006.

And $69 million for 2007—that is a $7.6 million, 11 percent, increase—for ensuring the safety of reclamation dams.

Eight-point-five million for 2007, $7.5 million decrease from the 2006 program level, for science and technology programs.

And $39 million for 2007, the same amount as the enacted level, for site security. The 2007 budget includes funding for guards and surveillance of facilities, anti-terrorism upgrades, law enforcement functions.

Ten million dollars for water recycling and reuse projects. This is a $15 million decrease from 2006.

I anticipate that this tight budget will cause us some real problems and I appreciate the fact that you have put together a budget that is reasonably balanced as you see it, and we will have our views to see whether we agree with that as we complete our work.

Senator Reid is not here, but I understand if he has a statement we will introduce it in the record, and it is with his concurrence that we proceed without a minority member today.

Senator Craig, very active in this committee, I yield to you for whatever time you would like.

STATEMENT OF SENATOR LARRY CRAIG

Senator CRAIG. Well, thank you very much, Mr. Chairman.

I am sure that the Secretary and the Commissioner come before us with the Bureau of Reclamation budget facing a 3.5 percent decrease from 2006 levels in what I would suggest, although it may not be articulated by them, to be a frustrating budget. I think all of us recognize, and certainly this committee does and you do, Mr. Chairman, the aging infrastructure that we are dealing with and

the need to obviously, to deliver water and its importance, and in the West now more so than ever.

Before I go on, let me also recognize, as you have, that Commissioner Keys is leaving us. John, I must tell you how proud I have been of the service you have provided to us, to our Government, to the West for a good number of years. John and I go back a long ways. When he was serving in Idaho we worked very closely together, and that relationship continued. The Commissioner has been instrumental in developing the needed Water 2025 program. He is returning to the West and he will find a West just in the short time that he has been here that is growing dramatically, a West that is populating at an unprecedented rate, a West that is populating in the most arid parts of our country.

The three fastest growing States in the West right now are Arizona, Nevada, and my State of Idaho, Mark's State of Idaho. We live in the high desert great basin region of the country. For us to not be focusing with the intensity of resource that I think we need for water and water development is going to catch up with us. We are going to have to start running faster than we are running today to resolve some of those problems that are needed.

Right now, a classical thing is happening in Idaho. The Idaho legislature is battling it out over how to re-look at old first in line, first in time water rights, and should they be used in slightly different ways, for enhanced storage, enhanced water into the system. That is an interesting battle that is going on at the legislative level right now. But I think, Mr. Chairman, it is prelude to the reality of some of our problems that we are facing in a country; in a region of the country that obviously does not get all the water it needs. That battle will continue.

The Bureau is going to play a role in it. They must play a role in it. Your bill, the Rural Water Supply Act, Mr. Chairman, I hope we can see that through the House this year. I think it is going to begin to focus us in ways that we need to focus with some resource that is going to be awfully important.

Lastly, Mr. Chairman, I have to say this because, thanks to the Secretary and the Commissioner, I did something over the recess that I have been wanting to do for years. I spent a day at Hoover Dam and went top to bottom, in a structure that still is operating as effectively, if not more so, than it was designed to do in the 1930's when it was built. I could go on and on, but the one thing behind it that was interesting is that the impoundment, the lake, the reservoir, was just a little over 50 percent full.

There is a very real reality to the water system there and the supply of the river that is so important to that portion of the West and the absence of water at this moment. I thought it was fairly dramatic. The reality is that Colorado just ain't producing water. You have got to get busy.

Senator ALLARD. Yes, we are trying to.

Senator CRAIG. All right, okay. And probably keep more of it.

Anyway, thank you very much, Mr. Chairman. We are glad to have you before us, both Mr. Secretary and Commissioner. Again, John, we hope you the very best in your retirement.

Mr. KEYS. Thank you very much.

Senator DOMENICI. Colorado had some late snow.

Senator CRAIG. Yes, they did.

Senator ALLARD. And down around the New Mexico border.

Senator CRAIG. And they are getting it again.

Senator DOMENICI. Is it in the right place? Is it coming down some more?

Senator ALLARD. Yes.

Senator DOMENICI. It is too late, but that is good.

Senator, do you have anything you would like to offer?

STATEMENT OF SENATOR TIM JOHNSON

Senator JOHNSON. Just very briefly.

Mr. Secretary, I want to welcome Secretary Limbaugh here as well as Mr. Keys. Commissioner Keys, I too want to join in thanking you for your extraordinary service over these many years. We have worked very closely with you on our BOR water projects in particular in South Dakota and I wish you well and the people of South Dakota wish you well in whatever next may come your way in terms of your next endeavors.

I do want to express my concern that once again the BOR budget for the Great Plains Region is simply inadequate, given the ongoing projects that we have out there. It is my understanding that the recommendation is $168 million for Water and Related Resources. That is a $14.4 million decrease from 2006. It is my understanding that about $68.7 million is budgeted for ongoing rural water projects. That includes the municipal, rural, and industrial, MRI account. That includes the Mni Wiconi and the Lewis and Clark Rural Water Systems in South Dakota.

Very frankly, the Mni Wiconi and Lewis and Clark Water Systems in South Dakota alone could consume the entire budget for ongoing water projects. Each of them could use well over $30 million in the coming fiscal year for construction. What I fear happening is that these projects are being stretched out to such a great degree that not only does it delay getting water in the case of the Mni Wiconi to some of the poorest of the poor, three Indian tribes, but the overall cost of these projects is becoming immense, which may make it almost unworkable for some of the component rural water systems.

Like buying anything else, the more we can pay up front the less it will cost down the road. So I am very worried that we continue to come in with budget recommendations that are excessively low and are going to make these water projects as well as others around the country far more costly to the taxpayers than would otherwise be the case.

Now, I appreciate that the President campaigned on lower taxes and smaller government, so no one should be surprised that there is an inadequate budget for public works projects such as these. Nonetheless, these projects are key infrastructure improvements that will result in economic growth and prosperity and public health throughout large regions of the country, and I think that it is a classic case of being penny-wise and pound-foolish to nickel-and-dime and underfund these key water projects.

The BOR has done a great job of managing these projects, of building these projects. So my criticism is not with the BOR. The criticism is with the overall level of funding that OMB has allo-

cated in the recommendations and, frankly, our budget resolution does not do as well as I would like either, despite great efforts on the part of our chairman and others to make sure that we try to get a reasonable allocation.

So I want to share those concerns with you, but most of all, Commissioner Keys, to thank you for working very closely with my staff and with South Dakotans over the years. We have some of the most extraordinary and largest scale drinking projects in the world in that State, and your willingness to work with us on those projects is a big reason why we have come as far as we have. Thank you.

Senator DOMENICI. Thank you very much, Senator.

Senator Allard.

STATEMENT OF SENATOR WAYNE ALLARD

Senator ALLARD. Well, Mr. Chairman, I would just like to make my full statement a part of the record and join you and the other members of the committee in expressing to Commissioner Keys our appreciation for his service. I understand that you have not decided what you are going to be doing next, but I wish you well in whatever endeavors you may decide to do, even if you are just going to retire and take life easy, which I cannot imagine somebody like you is going to end up doing. But I do wish you well with the other members of the committee.

Also, I just want to highlight a problem that I see emerging and that is maintenance of our facilities we already have out there. I know that other members have similar problems in their States that we do, that concern about certain projects that have some maintenance requirements that we think we really need to deal with and we need to rehabilitate many of those projects.

Colorado has 18 Bureau projects there. We have utilized the Department a lot historically, and these projects I think have become especially prominent in the last several years in Colorado, in fact the entire West, because of the terrible drought that you have out here on your chart. It has been shifting around both in the northern and southern parts of the West.

PREPARED STATEMENT

Many federally owned Bureau of Reclamation projects are currently at or past their life expectancy and in severe need of rehabilitation. The Bureau has maintained that rehabilitation is the same as operations and maintenance, which in many cases was turned over to local operating agencies. So I just say that it seems to me that we need to be looking at these things more seriously. So I will have some questions for you in that regard, and I do not understand why you do not take a greater interest in rehabilitation of these projects, because we are not going to be building new ones and we need to make sure that the ones that we have out there are up to par with changing standards and up there to operate at maximum efficiency, because I do not see us getting a lot of new projects out there.

Thank you, Mr. Chairman.

[The statement follows:]

PREPARED STATEMENT OF SENATOR WAYNE ALLARD

Mr. Chairman, thank you for holding this hearing. Those of us in the West are well aware of the important work that the Bureau of Reclamation has done over the years. In Colorado there are 18 Bureau projects. These projects are vital in supplying water to many people in rural areas of the State. The value of these projects has been especially prominent during the last 4 to 5 years, as Colorado—and the entire West—has experienced terrible drought.

I would like to mention a growing problem with Bureau projects throughout the West, which I will follow-up on during the question portion of this hearing. Many federally-owned Bureau of Reclamation projects are currently at, or past, their life expectancy and in severe need of rehabilitation. While the cost of rehabilitation is generally one-half to one-third of the cost of replacing a project this is more than many communities can afford. The Bureau has maintained that rehabilitation is the same as operations and maintenance, which in many cases was turned over to local operating agencies long ago.

It seems to me, however, that these two things are not the same. No matter how many oil changes or tune-ups you give a car, it will eventually no longer be serviceable. The same can be said of these projects. Local entities have worked diligently over the years to care for, and make repairs to, these projects. But eventually they reach the end of their operational life, and more extensive help is needed. I cannot understand why the Bureau continues to maintain that they have no responsibility to assist local communities in the rehabilitation of federally-built, federally-owned projects.

Before I close I would like to thank Commissioner Keyes for his service. Mr. Keyes, I understand that you have announced your resignation, and will be leaving the Bureau April 15. We wish you all the best in whatever you choose to do next.

Senator DOMENICI. Before we proceed, I think we should let this record, hearing record, reflect that we commence these hearings at a rather historic time, because under the Energy Policy Act we have totally modernized the licensing process for water projects in the United States and diversions, thanks to the extraordinary leadership of Larry Craig, and we have something that is workable. It is going to be a difficult, long, arduous implementation process, without any question. Perhaps we will have an oversight hearing when you think it is right.

Senator CRAIG. I think we should do that.

Senator DOMENICI. Sorry I did not have that on, but I think you understood most of what I said.

Incidentally, speaking to my staffer out there, I would prefer if you would come up here and sit by me.

Now, having said that, we are going to proceed, Commissioner, with you and then with Mark in that order. Or do you want to go in the reverse order? Mr. Secretary, do you want to go first?

Mr. LIMBAUGH. Yes, please, Mr. Chairman.

Senator DOMENICI. Let us do that. You are on.

STATEMENT OF MARK LIMBAUGH

Mr. LIMBAUGH. Thank you, Mr. Chairman and members of the committee. Good morning. I am pleased to be here today to introduce the 2007 budget for the Bureau of Reclamation and the Central Utah Project. I would ask that my entire statement be made part of the record.

Senator DOMENICI. It will be.

Mr. LIMBAUGH. Thank you, Mr. Chairman.

Joining me today is Reclamation Commissioner John Keys and CUPCA Program Director Reed Murray. Also with us is John Trezise, Budget Director for the Department of the Interior; and Bob Wolf, Reclamation Budget Director.

HIGHLIGHTS OF THE FISCAL YEAR 2007 BUDGET REQUEST FOR THE BUREAU OF RECLAMATION

Before turning to the Commissioner, I would like to highlight a few details of the Reclamation request for the subcommittee. Recently, the National Academy of Sciences completed a study on the Bureau of Reclamation's construction and infrastructure programs. This study looked into the future of the agency and provided some insight on how Reclamation can improve its construction and infrastructure management functions, as well as address some contemporary problems in dealing with water supply and infrastructure challenges in the future.

I want to assure this subcommittee, Mr. Chairman, that I am personally committed to ensuring that Reclamation addresses the findings and recommendations of this study in order to improve the effectiveness and efficiency of the management of infrastructure and construction processes. I brought copies of "Managing for Excellence," Reclamation's action plan in addressing the study's findings, for the subcommittee to review, and I look forward to working with all of you in this effort.

WATER SUPPLY CRISES IN THE WEST

Chronic water supply problems in the western States served by the Bureau of Reclamation will continue to be a challenge. Demand for water in many basins of the West, as many of you have noted this morning, exceeds available supply even in normal years. Recurrent droughts compound this problem. For example, the Southwest is in the sixth year of a severe drought. Projections for this year suggest very low water supplies that could negatively impact farmers, urban residents, Native Americans, and fish and wildlife alike.

When combined with the fact that the West is home to some of the fastest growing communities in the Nation, these realities guarantee that water supply crises will become more frequent if we do not act now. Our Water 2025 program has sparked a movement to change the way we think about and value water supplies in the West. The challenge grants under Water 2025 have provided the means for many western water managers to implement innovative measures for conserving and managing water more effectively to meet unmet needs. Through the challenge grant component of Water 2025, Reclamation has awarded 68 challenge grants in 16 western States, collectively, representing $60 million in water management improvements, $44 million of which came from private sources. In other words, non-Federal interests have invested approximately $3 for every $1 the Federal Government has invested.

Also, looking for the next generation of desalination technologies through targeted research and development will be key to finding new cost-effective water supplies in many areas of the West in the future.

Continuing the Water 2025 program into the future will encourage solutions to prevent conflict and crises over water, the real barriers to progress in the West. Speaking of problems, our water supply crises that we have seen recently in the Middle Rio Grande and

the Klamath River Basins are the sort of crises we hope to avoid through Water 2025.

In the 2007 budget, the Bureau of Reclamation continues to address the Klamath Basin with continued emphasis on working across the landscape cooperatively to address water needs of stakeholders and endangered species. In the Middle Rio Grande Project, the Reclamation request now totals almost $24 million for fiscal year 2007. Of this amount, almost $11 million is to address the status of endangered species, including the Rio Grande silvery minnow and the Southwest willow flycatcher, through the collaborative program.

In addition to Reclamation funding, Interior is working closely with other Federal agencies and non-Federal partners to improve the status of endangered species while also protecting existing and future uses of water in the basin. In fact, on April 11 and 12, Reclamation will host the first annual collaborative program symposium in Albuquerque to more effectively coordinate efforts to address endangered species needs in the basins.

Finally, the Middle Rio Grande Water Conservancy District is just one of the many entities Reclamation has worked with through the Water 2025 program to help stretch water supplies in a very dry area of the West.

PREPARED STATEMENT

In conclusion, I would now like to turn to Commissioner John Keys to provide more details on the Reclamation budget. After his statement, he and I would be pleased to answer questions, and Reed Murray from the Central Utah Project Office is also available for questions as well.

Mr. Chairman, thank you.

[The statement follows:]

PREPARED STATEMENT OF MARK LIMBAUGH

Good morning. I am pleased to be here today on behalf of the Secretary to discuss the fiscal year 2007 budget for the Department of the Interior. I appreciate the opportunity to highlight our priorities and key goals.

The Department's broad, multi-faceted mission and geographically dispersed services and programs uniquely contribute to the fabric of America by maintaining and improving the Nation's natural and cultural resources, economic vitality, and community well being. Interior's 70,000 employees and 200,000 volunteers live and work in the communities, large and small, that they serve. They deliver programs through partnerships and cooperative relationships that engage and invite citizens, groups, and businesses to participate.

The challenges of our diverse responsibilities are many, but they are made more manageable through an integrated approach that defines common mission goals for all bureaus and offices. The Department's integrated strategic plan is key to this approach. The plan defines four mission categories, which include resource protection, resource use, recreation, and serving communities. Capabilities in partnerships, management, and science are at the foundation of the plan and weave throughout the four mission goals.

Although the details of the respective missions of Interior's bureaus and offices differ, the central focus is the same. A focus on excellent performance requires mission clarity, good metrics, and management excellence. Management excellence requires a focused approach to maintain and enhance program results, making wise management choices, routinely examining the effectiveness and efficiency of programs, finding effective means to coordinate and leverage resources, and the continuous introduction and evaluation of process and technology improvements.

The 2007 budget reflects the Department's commitment to these management strategies and management excellence.

BUDGET OVERVIEW

The 2007 budget request for current appropriations is $10.5 billion. Permanent funding that becomes available as a result of existing legislation without further action by the Congress will provide an additional $5.6 billion, for a total 2007 Interior budget of $16.1 billion.

The 2007 current appropriations request is a decrease of $392.2 million or 3.6 percent below the 2006 funding level. If emergency hurricane supplemental funding is not counted, the 2007 request is a decrease of $321.9 million or 2.9 percent below the 2006 level.

The request for the Bureau of Reclamation and the Central Utah Project, funded in the Energy and Water Development Appropriations Act, is $923.7 million. This request includes a net programmatic reduction of $43.1 million, or 4.1 percent, from the 2006 funding level. It also includes the proposed cancellation of $88.0 million in prior year balances of appropriations for the Desert Terminal Lakes program.

The 2007 Central Utah Project budget is $40.2 million, an increase of $6.1 million above the 2006 enacted level. The increase will maintain progress towards timely completion of the project. This funding level, if maintained in the out years, will allow the project to be completed by 2021.

2005 HURRICANES

In addition to the funds requested in the budget, on February 16, 2006, the President sent the Congress a supplemental funding request for hurricane recovery. The supplemental includes $216 million for Interior agencies. Funding will be used to conduct clean-up and debris removal and repairs and reconstruction of facilities at park units, refuges, and USGS science facilities. These actions will allow us to open roads and trails to the public, repair visitor centers and exhibits, and reconstruct water control structures to host migratory bird populations and other wildlife. The supplemental also includes funding for MMS to complete restoration of its operations in New Orleans.

DEPARTMENTAL PROGRAMMATIC HIGHLIGHTS

The 2007 budget maintains and improves performance across the Department's strategic goals to achieve healthy lands and water, thriving communities and dynamic economies throughout the Nation. Key goals for 2007 include:

—Enhancing America's energy supplies through responsible energy development and continued implementation of the Energy Policy Act;
—Building on successful partnerships across the country and expanding opportunities for conservation that leverage Federal investments;
—Continuing to advance trust reform;
—Coordinating existing efforts under a unified program that focuses on high-priority historic and cultural protection under the Preserve America umbrella;
—Preventing crises and conflicts over water in the West through Water 2025;
—Continuing to reduce risks to communities and the environment from wildland fires; and
—Providing scientific information to advance knowledge of our surroundings.

Before turning this over to Commissioner John Keyes for a detailed discussion of our water programs in the Bureau of Reclamation, I want to highlight several aspects of the Interior Department budget.

EVERGLADES

I want to commend the subcommittee for its continued support of Everglades restoration efforts. The Department is both a steward, with specific mandates from Congress, and a partner, working with other agencies to restore and protect the South Florida ecosystem. The Department's highest priority in this effort is the completion of the Modified Water Deliveries project. Completion of this project is critical for the preservation and restoration of the resources at Everglades National Park. Furthermore, improved flows of water to the park will lay a strong foundation for future environmental benefits to be realized for the Everglades under the Comprehensive Everglades Restoration Plan.

The funding for the Modified Water project provided in 2006 with the strong support of the subcommittee will complete the 8.5 Square Mile Area component of the project. Funding requested for 2007 in the budget of the National Park Service and the Corps of Engineers will begin work on modification of the Tamiami Trail. As the subcommittee is aware, the recently approved Revised General Reevaluation Report for the Tamiami Trail calls for a 2-mile bridge to the west and 1-mile bridge to the east. This approach will provide the necessary conveyance of water south

from the Water Conservation Area 3B into the Northwest Shark River Slough section of the Everglades National Park.

WATER 2025—PREVENTING CRISES AND CONFLICTS

The 2007 budget includes an increase of $9.5 million for Water 2025, for a total funding level of $14.5 million. I am pleased to report that the administration has submitted legislation for the authorization necessary to accomplish the goals of this program.

The overarching goal of Water 2025 is to meet the challenge of preventing crises and conflicts over water in the West. Water 2025 will achieve this by increasing the certainty and flexibility of water supplies, diversifying water supplies, and preventing crises through added environmental benefits in many watersheds, rivers, and streams.

Competitive 50/50 Challenge Grant Program.—The Challenge Grant program will remain an integral part of Water 2025 in 2007. In fiscal year 2004 and again in fiscal year 2005, the response to the program was overwhelming, with Reclamation receiving over 100 proposals for Challenge Grants each year. To date, Reclamation has awarded funding for 68 Challenge Grants in 16 States, including 62 projects by irrigation and water districts and 6 more by western States. The funded projects involve innovative approaches to improving water management through water marketing, water conservation, and modernizing water delivery systems. Collectively, these projects represent almost $60 million in improvements in the West, including a non-Federal contribution of $44 million and the Federal Government contribution of $15 million. In other words, for every $1 the Federal Government has invested, there has been about $2.90 non-Federal investment.

The projects selected for award through the Challenge Grant program in fiscal year 2004 and fiscal year 2005 include:

—23 projects that, collectively, will convert 74 miles of dirt canals to pipeline;

—44 projects to install water measurement devices, SCADA systems and automate water delivery systems; and

—11 projects that include water marketing plans.

Based on estimates in the project proposals, the 68 funded projects could save up to 285,000 acre-feet per year, collectively, once fully implemented. An acre-foot of water is enough to supply a family of four for up to a year.

The overwhelming response to the Challenge Grant Program underscores the significance of Water 2025 to Western water users and proves the success of the Challenge Grant concept. The response to the Challenge Grant Program also demonstrates a widespread eagerness to improve the way water is managed across the West and to address local needs.

Examples of some of the funded Challenge Grant projects include:

Arizona.—The Gila Gravity Main Canal Board, in partnership with the City of Yuma and NAD Bank, will make canal system improvements to conserve water, restore canal capacity and improve operation efficiency. Resulting water savings are estimated at up to 45,000 acre-feet (af) of water per year. The conserved water will be available for other Colorado River users. The total project cost is $2,207,775 with a Water 2025 contribution of $284,000.

California.—The Calleguas Municipal Water District in Thousand Oaks will install automated monitoring devices to 23 water distributors to allow implementation of new rate structures encouraging more efficient water use, conservation of water, and better management of local groundwater supplies. This project will reduce demand on the Metropolitan Water District and the Colorado River and will save an estimated 5,500 acre-feet per year. The total project cost is $3,095,000, with a Water 2025 contribution of $300,000.

Idaho.—The Preston Whitney Reservoir Company will replace 23,333 feet of open canal with PVC pipe and modify the works structure at Lamont Reservoir. The project is estimated to save 1,800 acre-feet of water per year. The total project cost is $877,153, including the Water 2025 contribution of $300,000.

Montana.—The Paradise Valley Irrigation District will replace 9,000 feet of leaky canal with a pressure pipeline system that will conserve 1,000 acre-feet of water per year. It will be one of the first pressurized systems in the area and a significant improvement over the old system. This project will conserve water for the District by eliminating seepage in the canal and improve operation and control in the main canal. Efficiency levels will reach nearly 100 percent with the new pipeline system, compared to the current efficiency rate of 40 to 45 percent. Irrigation seasons will be extended during drought years by making more use of the water that is available. The total project cost is $524,215, with a Water 2025 contribution of $262,107.

New Mexico.—The State of New Mexico will rehabilitate a USGS streamflow gage on the Pecos River to provide more accurate high streamflow measurements. The gage will help better measure water under high flow conditions. Accurate measurement of water delivered to Texas under the Pecos River Compact is critical to the State. The total project will cost $146,660 with a Water 2025 contribution of $59,480.

Oregon.—The Central Oregon Irrigation District in Bend Oregon will collaborate with numerous partners—seven irrigation districts, six cities, three tribes, and the Deschutes Resource Conservancy—to address long-term basin water needs by establishing a pilot water bank. This project has a long-term potential savings of up to 326,522 acre-feet a year. The project demonstrates collective partnering of basin interests and addresses many institutional constraints. The total cost of the project is $588,750, with a Water 2025 contribution of $233,750.

Texas.—The District will purchase and install 225 on-farm delivery site meters for more precise water measurement and efficient water delivery. The saved water—3,464 acre-feet per year—will enable continued farming during droughts and increase the length of the irrigation season. On-farm metering will help the District achieve its goal of 100 percent volumetric pricing of water delivered to its users. The total cost of the project is $602,500, with a Water 2025 contribution of $300,000.

Utah.—The Sevier River Water Users Association in Utah will expand and enhance their real-time monitoring and control system to better manage water deliveries. The project is estimated to save up to 22,500 acre-feet of water.

Water System Optimization Reviews.—The fiscal, legal, and political hurdles to the development of significant new supplies make it imperative that existing water supply infrastructure be fully utilized within the framework of existing treaties, interstate compacts, water rights, and contracts. Reclamation will work with willing States, irrigation and water districts, and other local entities to assess the potential for water management improvements in a given basin or district. Potential actions identified in these reviews may form the basis for future Water 2025 cooperative grant proposals.

Improved Water Purification Technology.—We can make better use of existing water supplies that may have limited use due to high salt or mineral contents, or which may be otherwise unsuitable for consumptive use. Lowering the cost of desalination is one of the key tools to managing scarce water resources because of the potential it offers to expand usable water supplies. A portion of the funding requested will be used to award competitive, cost-shared research and development cooperative agreements that focus on inland brackish ground waters, energy efficiencies, and management of concentrates.

A majority of the funding requested for this component will support operations and research and development conducted at the Tularosa Basin National Desalination Research Facility, which is proposed to be re-named the Brackish Groundwater National Desalination Research Facility and scheduled to be operational in 2007. The budget request includes funds for start-up operations, including hiring an external organization to operate the facility under Reclamation direction and starting initial research and development.

KLAMATH RIVER BASIN

The Klamath River Basin demonstrates our ability to work across the landscape cooperatively to accomplish our goals. The 2007 budget includes $63.4 million for Klamath Basin restoration activities. This is an increase of $7.8 million and, with funds available in 2006, will be used to restore streams and wetlands in the upstream and downstream reaches of the Klamath River and its tributaries.

The Reclamation budget request of $32.2 million provides funding for studies and initiatives related to improving water supplies to meet the competing demands of agricultural, tribal, wildlife refuge, and environmental needs in the Klamath River Basin.

—The request includes an increase of $2.4 million for investigations to increase water storage/conserve water, an increase of 132 percent from 2006, for a total funding level of $4.2 million.

—The request includes an increase of $982,000, for total funding of $8.7 million to address ESA requirements including fish screens, passage, and ladders.

—The balance of the funding increase is spread across various components of the Klamath Project, primarily water quality studies and operations and maintenance.

In 2007, through its Partners for Fish and Wildlife program, FWS will begin a new $2.0 million Lower Klamath Basin initiative. Funding will be used to provide fish passage on tributaries; fencing for riparian areas along streams; assessment

and monitoring of disease, particularly in juvenile fish; and restoration of stream channels from former mining excavations. The 2007 budget also includes $3.5 million to acquire and restore agricultural lands adjacent to Upper Klamath Lake to provide quality habitat for larval and juvenile suckers and a host of native waterbirds, improve water quality for the lake and downstream anadromous fish, and increase water storage in the lake.

ADDRESSING OTHER DEPARTMENTAL CHANGES

For the record, I would like to call the attention of the subcommittee to proposals requested in the President's Budget for programs funding in the Interior, Environment and Related Agencies Appropriations Act. The budget continues to emphasize our operating programs, including those for the National Park Service, leveraging of Federal resources through cooperative conservation; continued progress on Indian Trust reform; and increasing access to renewable and non-renewable energy sources, while enhancing environmental monitoring and protection. Some details of our energy proposals follow.

ENERGY DEVELOPMENT

The Department's energy programs play a critical role in providing access to domestic oil, gas, and other energy resources. To enhance domestic production, the 2007 budget proposes a $43.2 million initiative to implement the Energy Policy Act of 2005 and continue progress on the President's National Energy Policy. In total, the budget includes $467.5 million for the Department's energy programs.

APD Processing.—In 2003, the Department released an Energy Policy and Conservation Act mandated report identifying five basins in Montana, Wyoming, Utah, Colorado, and New Mexico as containing the largest onshore reserves of natural gas in the country and the second largest resource base after the Outer Continental Shelf. These onshore basins contain an estimated 139 trillion cubic feet of natural gas, enough to heat 55 million homes for almost 30 years. These resources offer the best opportunity to augment domestic energy supplies in the short-term.

Before any leasing for oil and gas production can occur on the public lands in these areas, BLM must have a land-use plan in place. Beginning in 2001, with the support of Congress, BLM initiated the largest effort in its history to revise or amend all of 162 resource management plans. Within areas designated in plans as appropriate for mineral development, BLM has made a concerted effort to help bring additional oil and gas supplies to market. In 2002, 2.1 Tcf were produced from Federal, non-Indian lands. In 2003 and 2004, 2.2 Tcf and 3.1 Tcf, respectively, were produced from these lands.

The BLM is experiencing a steady increase in the demand for drilling permits. In 2000, BLM received 3,977 applications for permits to drill. In 2005, BLM received 8,351 APDs. The bureau estimates that the number it will receive in 2006 will exceed 9,000, more than double the number processed 5 years ago. To address this demand, BLM has taken steps to ensure that drilling permit applications are processed promptly, while at the same time ensuring that environmental protections are fully addressed. These measures, along with increased funding, have allowed BLM to make significant progress in acting on permit applications. In 2005, BLM processed 7,736 applications, nearly 4,000 more than it was able to process in 2000.

Section 365 of the Energy Policy Act established a pilot program at seven BLM field offices that currently handle 70 percent of the drilling permit application workload. The pilot program is testing new management strategies designed to further improve the efficiency of processing permit applications. The Energy Policy Act provides enhanced funding for the pilot offices from oil and gas rental receipts. With more efficient processes and authorities and funding provided through Section 365, BLM currently anticipates processing 10,160 permits in 2006.

The efforts of BLM have achieved significant results. Almost 4,700 new onshore wells were started in 2005. This level of activity is 56 percent higher than in 2002.

For 2007, the budget proposes an increase of $9.2 million to focus on the oil and gas workload in BLM's non-pilot offices, which are also experiencing a sharp and sustained demand for APDs. This increase will provide $4.3 million for drilling permit processing and $2.8 million for inspection and enforcement activities. It will also provide $2.1 million for energy monitoring activities. The budget also includes $471,000 for FWS to increase consultation work with the non-pilot offices.

The budget assumes continuation through 2007 of the enhanced funding for pilot offices from oil and gas receipts to facilitate a smooth transition to funding from drilling permit processing fees, effective September 30, 2007. Legislation to be proposed by the administration will allow a rulemaking to phase in full-cost recovery

for APDs, beginning with a fee amount that will generate an estimated $20 million in 2008, fully replacing the amount provided by the Energy Policy Act.

Alaska North Slope.—The most promising area for significant long-term oil discoveries and dramatic gains in domestic production in the United States is the Alaska North Slope. The U.S. Geological Survey estimates a 95 percent probability that at least 5.7 billion barrels of technically recoverable undiscovered oil are in the ANWR coastal plain and 5 percent probability of at least 16 billion barrels. They estimate the mean or expected value is 10.36 billion barrels of technically recoverable undiscovered oil. At $55 a barrel, more than 90 percent of the assessed technically recoverable resource estimate is thought to be economically viable. At peak production, ANWR could produce about 1 billion barrels of oil a day, about 20 percent of our domestic daily production and more oil than any other State, including Texas and Louisiana.

The 2007 budget assumes the Congress will enact legislation in 2006 to open ANWR to energy exploration and development with a first lease sale held in 2008 and a second in 2010. The budget estimates that these two lease sales will generate a combined $8.0 billion bonus revenues, including $7.0 billion from the 2008 lease sale.

The 2007 budget includes an increase of $12.4 million for BLM energy management activities on the Alaska North Slope. The additional funds will support the required environmental analyses and other preparatory work in advance of a first ANWR lease sale in 2008. The requested increase will also support BLM's leasing, inspection, and monitoring program in the National Petroleum Reserve-Alaska and BLM's participation in the North Slope Science Initiative authorized by the Energy Policy Act. In addition, a significant share of the $12.4 million increase will be used by BLM to respond to the environmental threat posed by abandoned legacy wells and related infrastructure on the North Slope.

Outer Continental Shelf Development.—Deepwater areas of the Gulf of Mexico currently account for 17 percent of domestic oil and 6 percent of domestic gas production. However, over the next decade, oil production in the Gulf is expected to increase by 43 percent and natural gas by 13 percent. The increase will come from deepwater and greater depths below the ocean floor. The 2007 budget includes an increase of $2.1 million for OCS development, to allow MMS to keep pace with the surge in exploration and development in the deepwater areas of the Gulf and $1.5 million for OCS environmental impact statements on future lease sales.

New Innovations in Energy Development.—The 2007 budget includes an increase of $6.5 million for MMS's new responsibilities under the Energy Policy Act for offshore renewable energy development. MMS will establish a comprehensive program for regulatory oversight of new and innovative renewable energy projects on the OCS, including four alternative energy projects for which permit applications were previously under review by the U.S. Army Corps of Engineers.

Oil shale resources represent an abundant energy source that could contribute significantly to the Nation's domestic energy supply. Oil shale underlying a total area of 16,000 square miles in Colorado, Utah, and Wyoming represents the largest known concentration of oil shale in the world. This area may contain in place the equivalent of 1.2 to 2 trillion barrels of oil. The budget proposes a $3.3 million increase, for a total program of $4.3 million, to enable BLM to accelerate implementation of an oil shale development program leading to a commercial leasing program by the end of 2008, in compliance with section 369 of the Energy Policy Act. This request is accompanied by $500,000 budgeted for USGS to determine the size, quality, and quantity of oil shale deposits in the United States.

Gas hydrates, found in some of the world's most remote regions such as the Arctic and deepwater oceans, could dramatically alter the global balance of world energy supply. The estimated volume of natural gas occurring in hydrate form is immense, possibly exceeding the combined value of all other fossil fuels.

The 2007 budget includes a $1.9 million package of increases for gas hydrate research and development by MMS, BLM, and USGS. This will fund a coordinated effort in the Gulf of Mexico and the North Slope of Alaska to accelerate research, resource modeling, assessment, and characterization of hydrates as a commercially viable source of energy.

CONCLUSION

The budget plays a key role in advancing our vision of healthy lands, thriving communities, and dynamic economies. Behind these numbers lie people, places, and partnerships. Our goals become reality through the energy and creativity efforts of our employees, volunteers, and partners. They provide the foundation for achieving the goals highlighted in our 2007 budget. This concludes my overview of the 2007

budget proposal for the Department of the Interior and my written statement. I will be happy to answer any questions that you may have.

Senator DOMENICI. We thank you. Who was it you wanted me to call on next?

Mr. LIMBAUGH. Commissioner Keys.

Senator DOMENICI. Mr. Commissioner, you have the floor.

SUMMARY STATEMENT OF JOHN W. KEYS III

Mr. KEYS. Thank you, Mr. Chairman and members of the committee. It is my absolute pleasure to be here with you today to talk about our budget request for fiscal year 2007. As he said, with me is Bob Wolf, our Director of Program and Budget, who helps me keep up with the numbers.

Let me say, before I go ahead, that it is a pleasure to work with you and your committee staff. They have been good friends over the years and your staff people have been just outstanding to work with, and we do appreciate that very much.

I have submitted a full statement and I would appreciate it being made part of the record.

Senator DOMENICI. It will be.

Mr. KEYS. Mr. Chairman, before I get into——

Senator DOMENICI. Does that mean our staff has not given you enough static?

Mr. KEYS. No, sir, Mr. Chairman, that is not what it means. It means that we work together very well.

Senator DOMENICI. I see, okay. Static notwithstanding?

Mr. KEYS. That is correct.

Senator DOMENICI. Okay.

NATIONAL ACADEMY OF SCIENCES STUDY

Mr. KEYS. Mr. Chairman, before I get into the 2007 budget request, let me expand on some of the material that Mark talked about with the National Academy of Sciences study. In 2005, the Academy conducted a study to help Reclamation determine the appropriate organizational, management, and resource configurations needed to meet its construction and infrastructure management responsibilities associated with fulfilling our mission. This is the report that they produced from that effort.

We have produced an action plan to address the recommendations of this report, and we are pleased to share it with Congress and our stakeholders. We have provided you with copies so that you can see what we are trying to do. As we formulate actions to respond to the recommendations of the Academy, we will keep you informed to solicit your input and input from our customers and stakeholders. We have teams working on all of these issues. They will receive all of the time and attention that they need from my office on down. We appreciate the critical thinking that the Academies have given us and the information in the report. We fully intend to use it to improve Reclamation and the way we do business in the 21st century.

FISCAL YEAR 2007 BUDGET REQUEST FOR THE BUREAU OF RECLAMATION

Mr. Chairman, the overall 2007 budget request for Reclamation is $971.6 million in current authority. The numbers that you used in your opening remarks are correct. Our 2007 budget request continues the President's commitment to a more citizen-centered government and supports Reclamation's mission of delivering water and generating power. Some highlights from that proposal:

HIGHLIGHTS OF THE FISCAL YEAR 2007 BUDGET REQUEST

The Water 2025 program asks for $14.5 million, and I have provided an update on the Water 2025 program. Mark provided some statistics from the program. We think it is an excellent program that has a lot of potential to help us address problems in the near and mid-term future.

We have submitted a bill to Congress for permanent authorization of that program. This past year, we worked with our customers and stakeholders to put that bill together, and it has been submitted to Congress.

On the Klamath project, we are asking for $24.8 million. The 2007 funding request would continue the on-the-ground initiatives to meet multiple obligations, including providing water for irrigation and wildlife refuges, avoiding jeopardy to endangered and threatened species, and meeting tribal trust obligations.

Mr. Chairman, I might add that there was a court ruling on the Klamath project that directed Reclamation to attain the phase 3 flows on the Klamath River. I am happy to tell you that we have enough water in the Klamath Basin to meet those phase 3 flows in the river and to deliver irrigation water this year. We would have a problem if we get into a back-to-back bad water year situation. The court ruling was made, and we think we can meet the obligations on the Klamath River.

Senator DOMENICI. So that is good news for the Senators involved there.

Mr. KEYS. Yes, sir, it is.

I would add that the good water year helps because in some places, we have in excess of 200 percent of normal precipitation in the area.

On the Middle Rio Grande, we are asking for $23.7 million. That request would continue funding in support of the endangered species collaborative program and for acquiring supplemental water, doing the channel maintenance, and pursuing government-to-government consultations with Pueblos and tribes in the basin. The funding would also continue efforts to support the protection of and contribute to the recovery of the Rio Grande silvery minnow and the Southwest willow flycatcher.

On the Animas-La Plata Project, we are asking for $57.4 million. The 2007 request would continue funding construction of the project's major features, Ridges Basin Dam and the Durango pumping plant. It would also allow us to begin construction of the Ridges Basin Inlet Conduit and keep the project on schedule.

On site security, we are requesting $39.6 million. The 2007 request would ensure the safety and security of the public, Reclama-

tion's employees, and the key facilities on Reclamation projects. The fiscal year 2007 request assumes annual costs associated with guard and patrol activities would be treated as project costs subject to reimbursability. Costs of program management, studies, and hardening of facilities would remain non-reimburseable.

For the Safety of Dams program, we are asking for $69 million. The 2007 request would provide for risk management activities throughout Reclamation's inventory of 361 dams and dikes. The request would also provide pre-construction and construction activities for up to 21 dams identified through the program.

Our Rural Water program asks for $68.7 million. This request would support completion of ongoing rural projects and includes funding for municipal, rural and industrial systems for the Garrison Diversion Unit, the Mni Wiconi Project, Fort Peck-Dry Prairie Project, and the Lewis and Clark Project.

For the CALFED-Bay Delta program, we are asking for $38.6 million. Funds are requested to continue implementation of priority activities included in the CALFED-Bay Delta Authorization Act. Specifically, funds would be used for the environmental water account, storage feasibility studies, conveyance feasibility studies, science, implementation of projects to improve Delta water quality, ecosystem restoration, and planning and management activities.

PREPARED STATEMENT

Mr. Chairman, the 2007 budget request demonstrates Reclamation's commitment to meeting the water and power needs of the West in a fiscally responsible manner. Reclamation is committed to working with its customers, States, tribes, and other stakeholders to find ways to balance and provide for the mix of water resource needs in 2007 and beyond.

Thank you again for the continued support from the committee, and we would be happy to answer what questions you might have.

[The statement follows:]

PREPARED STATEMENT OF JOHN W. KEYS III

Thank you, Mr. Chairman, and members of the subcommittee for the opportunity to appear in support of the President's fiscal year 2007 budget request for the Bureau of Reclamation. With me today is Bob Wolf, Director of Program and Budget.

Our fiscal year 2007 request has been designed to support Reclamation's efforts to deliver water and generate hydropower, consistent with applicable State and Federal law, in an environmentally responsible and cost-efficient manner.

The funding proposed is for key projects that are important to the Department and in line with administration objectives. The budget request also supports Reclamation's participation in efforts to meet emerging water supply needs, to address water shortage issues in the West, to promote water conservation and improved water management, and to take actions to mitigate adverse environmental impacts of projects.

The fiscal year 2007 request for Reclamation totals $971.6 million in gross budget authority and is partially offset by discretionary receipts in the Central Valley Project Restoration Fund ($33.8 million) and rescission of unobligated balances for At Risk Desert Terminal Lakes ($88 million). The total program, after offsets to current authority and the inclusion of permanent authority is $849.8 million.

WATER AND RELATED RESOURCES

The fiscal year 2007 request for Water and Related Resources is $883.4 million. More specifically, the request for Water and Related Resources includes a total of $456.5 million for water and energy, land, and fish and wildlife resource management activities (which provides for construction, management of Reclamation lands,

and actions to address the impacts of Reclamation projects on fish and wildlife), and $376.9 million for facility operations, maintenance, and rehabilitation activities.

Providing adequate funding for facility operations, maintenance, and rehabilitation continues to be one of Reclamation's highest priorities. Reclamation continues to work closely with water users and other stakeholders to ensure that available funds are used effectively. These funds are used to allow the timely and effective delivery of project benefits; ensure the reliability and operational readiness of Reclamation's dams, reservoirs, power plants, and distribution systems; and identify, plan, and implement dam safety corrective actions and site security improvements.

Highlights of the fiscal year 2007 request for water and related resources include:

Water 2025 ($14.5 million).—Water 2025 is a high priority for the Secretary of the Interior and will focus Reclamation's financial and technical resources on areas in the West where conflict over water either currently exists or is likely to occur in the coming years.

The overarching goal of Water 2025 is to meet the challenge of preventing crises and conflict over water in the West. Water 2025 will attain this goal by increasing certainty and flexibility in water supplies, diversifying water supplies, and reducing conflict through the use of market-based approaches and enhancing environmental benefits in many watershed, rivers and streams consistent with State and Federal laws.

With $14.5 million, Water 2025 will continue to be a multifaceted program with projects that embody the overarching goal of preventing crises and conflict over water in the West. Leveraging limited Federal dollars through the Challenge Grant Program will continue to be a major component of Water 2025. The Challenge Grant Program will focus on projects that improve water management through conservation, efficiency, and water markets, as well as collaborative solutions to meet the needs of the future. Beginning in fiscal year 2007, a system optimization review component has been added to ensure existing water management systems are operated to maximize water deliveries. Modernization of existing systems will occur within the framework of existing treaties, interstate compacts, water rights, and contracts. Water 2025 will also continue to fund research for water purification, including research on desalination.

The Department transmitted the administration's proposed permanent authorizing language to Congress on March 7, 2006.

I would like to share with the committee several highlights of the Reclamation budget:

Klamath Project in Oregon and California ($24.8 million).—The fiscal year 2007 request will continue and increase funding for studies and initiatives related to improving water supplies to meet the competing demands of agricultural, tribal, wildlife refuge, and environmental needs in the Klamath River basin. Key areas of focus include increasing surface and groundwater supplies, continuing a water bank, making improvements in fish passage and habitat, taking actions to improve water quality, and continuing coordination of Reclamation's conservation implementation program.

Lower Colorado River Operations Program ($17.0 million).—The fiscal year 2007 request will provide funds for the work necessary to carry out the Secretary's responsibilities as water master of the lower Colorado River. The fiscal year 2007 request funds measures under the multi-species conservation program to provide long term Endangered Species Act compliance for lower Colorado River operations for both Federal and non-Federal purposes.

Middle Rio Grande ($23.7 million).—The fiscal year 2007 request will continue to address endangered species issues and support of the Endangered Species Collaborative Program. In addition, the request will continue funding for acquiring supplemental water, channel maintenance, and pursuing government-to-government consultations with Pueblos and Tribes. Finally, the funding will continue efforts that support the protection and contribute to the recovery of the Rio Grande silvery minnow and southwestern willow flycatcher.

Animas-La Plata in Colorado and New Mexico ($57.4 million).—The fiscal year 2007 request includes $57.4 million to continue construction of the project's major features, Ridges Basin Dam and Durango Pumping Plant. While work on these two features began in fiscal year 2003, maintaining funding at the level we have identified is necessary to complete construction of these features in a timely fashion. This level of funding will also permit the start of construction on the Ridges Basin Inlet Conduit, which is necessary to avoid substantial Project delays. Funding will be primarily directed to these three features while other key features are held for future implementation.

Columbia/Snake River Salmon Recovery in Idaho, Oregon, Montana, and Washington ($17.3 million).—The fiscal year 2007 request will address the requirements

in the biological opinions issued in December 2000 by the Fish & Wildlife Service and in November 2004 by the National Marine Fisheries Service. The 2004 biological opinion has been remanded to NOAA Fisheries and a new biological opinion is due in October 2006. During the remand, the 2004 biological opinion remains in place as Reclamation continues to implement actions identified in the 2004 updated proposed action. These requirements include significantly increased regional coordination efforts; actions to modify the daily, weekly, and seasonal operation of Reclamation dams; acquisition of water for flow augmentation; tributary habitat activities in selected subbasins to offset hydrosystem impacts; and significantly increased research, monitoring, and evaluation.

Site Security ($39.6 million).—An appropriation in the amount of $39.6 million is requested for site security to ensure the safety and security of the public, Reclamation's employees and key facilities. This funding includes $15.4 million for physical security upgrades and $24.2 million to continue all aspects of Reclamation-wide security efforts, including law enforcement, risk and threat analysis, implementing security measures, undertaking security-related studies, and maintaining guards and patrols on the ground.

The fiscal year 2007 budget request assumes annual costs associated with guard and patrol activities will be treated as project O&M costs subject to reimbursability based on project cost allocations. These costs in fiscal year 2007 are estimated at $20.9 million of which $18.9 million will be reimbursed; the actual amount may differ from this estimate based on actual operations costs. Of the funding to be reimbursed, $11.6 million will be in direct up-front funding from power customers, while $7.3 million in appropriated funds will be reimbursed by irrigation users, M&I water users, and other customers in the year in which they were incurred through Reclamation's O&M allocation process. Reclamation will continue to treat facility fortification, studies, and anti-terrorism management-related expenditures as non-reimbursable.

Safety of Dams ($69.0 million).—Assuring the safety and reliability of Reclamation dams is one of the Bureau's highest priorities. The Dam Safety Program is critical to effectively manage risks to the downstream public, property, project, and natural resources. The fiscal year 2007 request will provide for risk management activities throughout Reclamation's inventory of 361 dams and dikes, which would likely cause loss of life if they were to fail. The request includes preconstruction activities for modifications planned for the future. In fiscal year 2007, there will be two large-scale ongoing corrective action projects plus four new awards.

Rural Water ($68.7 million).—This request supports the completion of ongoing rural water projects. This includes funding for Municipal, Rural, and Industrial (MR&I) systems for the Pick Sloan-Missouri Basin Program—Garrison Diversion Unit (North Dakota), the Mni Wiconi Project (South Dakota), the Fort Peck Reservation/Dry Prairie Project (Montana), and the Lewis and Clark Project (South Dakota, Iowa, and Minnesota). The "Rural Water Act of 2005" (S. 895) was passed by the Senate in November 2005, and should address many of the problems identified by the Program Assessment Rating Tool (PART) evaluation of this program. The legislation directs the Secretary of the Interior to carry out a rural water supply program in reclamation States to: (1) investigate and identify opportunities to ensure safe and adequate rural water supply projects for municipal and industrial use in small communities and rural areas; and (2) plan the design and construction, through the conduct of appraisal investigations and feasibility studies, of such projects. This measure will bring more uniformity, direction, and prioritization for rural water projects. The legislation is awaiting action by the House.

Science and Technology (S&T) ($8.5 million).—The fiscal year 2007 request includes funding for the development of new solutions and technologies which respond to Reclamation's mission-related needs. We feel our S&T work is important and will contribute to the innovative management, development, and protection of water and related resources. Of the amount requested, about $1 million is planned for internal desalination Research & Development (R&D) conducted by Reclamation. Additionally, water purification funds requested through the Water 2025 program will be managed by the S&T program.

POLICY AND ADMINISTRATION

The $58.1 million request is an increase of approximately $800,000 from the fiscal year 2006 enacted level of $57.3 million. The additional funding in the fiscal year 2007 request includes funding for labor cost increases due to cost of living raises and inflationary costs for non-pay activities. Funding requested will be used to: (1) develop, evaluate, and direct implementation of Reclamation-wide policy, rules, and regulations, including actions under the Government Performance and Results Act,

and implement the President's Management Agenda; and (2) manage and perform functions that are not properly chargeable to specific projects or program activities covered by separate funding authority.

CENTRAL VALLEY PROJECT RESTORATION FUND

This fund was established by the Central Valley Project Improvement Act, Title XXXIV of Public Law 102–575, October 30, 1992. The request of $41.5 million is expected to be offset by discretionary receipts totaling $33.8 million, which is the maximum amount that can be collected from project beneficiaries under provisions of Section 3407(d) of the Act. The discretionary receipts are adjusted on an annual basis to maintain payments totaling $30.0 million (October 1992 price levels) on a 3-year rolling average basis. The net amount requested for fiscal year 2007, after the offset, is the same as fiscal year 2006. These funds will be used for habitat restoration, improvement and acquisition, and other fish and wildlife restoration activities in the Central Valley Project area of California.

CALIFORNIA BAY-DELTA (CALFED)

Title I of Public Law 108–361, titled the Calfed Bay-Delta Authorization Act, was signed by the President on October 25, 2004. The Act authorized $389 million in Federal appropriations over the period of fiscal year 2005 through fiscal year 2010. For fiscal year 2007, $38.6 million is requested to enable Reclamation to advance its commitments under the CALFED Record of Decision and with a focus towards implementation of priority activities included in the Calfed Bay-Delta Authorization Act that will contribute to resolving water resource conflicts in the CALFED solution area. Funds will specifically be used for the environmental water account, feasibility studies of projects to increase surface storage and improve water conveyance in the Delta, conduct critical science activities, implementation of projects to improve Delta water quality, ecosystem enhancements, and program planning and management activities.

PRESIDENT'S MANAGEMENT AGENDA

Reclamation continues to make progress in all areas of the President's Management Agenda. Efforts toward advancing management excellence in the fiscal year 2007 budget include: (1) improvements in performance based budgeting, (2) program evaluations utilizing the Program Assessment Rating Tool (PART), and (3) management studies to improve organizational, management, and resource configurations.

Performance Based Budgeting.—Reclamation's budget is supported by a performance-oriented framework that aligns to its mission and key outcome goals to: (1) Deliver Water Consistent with Applicable State and Federal Law, in an Environmentally Responsible and Cost-Efficient Manner, and (2) Deliver Power Consistent with Applicable State and Federal Law, in an Environmentally Responsible and Cost-Efficient Manner. Reclamation's work in Resource Protection and Recreation are also reflected in its outcome goals. The framework includes both long-term and annual performance goals that link to the Department of the Interior (DOI) Strategic Plan.

As part of Reclamation's budget process, funding requests for all projects and bureauwide programs are linked to the DOI Strategic Plan, further demonstrating their budget and performance ties. Activity Based Cost Management (ABCM) output data is also refined and analyzed to support Reclamation's efforts to produce cost information that, along with performance data, is used to enhance budget decision-making. ABCM data analysis will play an even greater role in formulating the fiscal year 2008 budget.

Program Assessment Rating Tool (PART).—Reclamation's performance budget also includes performance goals used in the assessment of program performance. For the fiscal year 2007 budget, Reclamation's Safety of Dams, Site Security and Water Management/Supply—Operations and Maintenance programs were evaluated using the PART process. The safety of dams program was rated effective. For this program, the administration has identified the need to establish performance data and track performance. The program has a strong track record, and refined performance measures will help us better track how well we are addressing dam safety issues. The site security program was rated moderately effective, with improvements needed in budget and performance integration. The program has been dramatically redesigned since 9/11/2001, and is making progress towards meeting our short-term and long-term goals of improving security at Reclamation facilities. The PART also rated the water management/supply operations and maintenance as adequate. Improvement plans for this program include developing a comprehensive strategy to operate and maintain Reclamation facilities.

Management Studies.—The National Academies of Science, National Research Council has completed its study to assist Reclamation in determining the appropriate organizational, management, and resource configurations to meet its construction and related infrastructure management responsibilities associated with fulfilling Reclamation's core mission of delivering water and power for the 21st century. An action plan that addresses the findings and recommendations in the study has been approved by the Secretary of the Interior. The action plan has been published on Reclamation's website and provided to the committee.

BUDGET AND PERFORMANCE INTEGRATION

In line with the Department's initiative, Reclamation continues to advance its efforts for improving budget and performance integration. To do so, Reclamation's senior leadership participates in quarterly reviews to focus on projections of whether or not our published annual performance targets will be met by the end of the fiscal year. When it is determined that accomplishment of a performance target may be in question, Reclamation identifies corrective actions to be taken.

Both Reclamation's budget and performance documents incorporate references to its outcome-oriented goals and measures as identified in the PART and the information that is used in the quarterly reviews with senior leadership. Reclamation completion of baseline data for several new measures will enable it, over time, to develop and analyze historical trends that may be used to better support its budget requests and the goals included in its operating plan.

FISCAL YEAR 2007 PLANNED ACTIVITIES

Reclamation's fiscal year 2007 priority goals are directly related to continually fulfilling our progress in water and power contracts while balancing a range of competing water demands. Reclamation will continue to deliver water consistent with applicable State and Federal law, in an environmentally responsible and cost-efficient manner. Reclamation will strive to deliver 28.4 million acre-feet of water to meet contractual obligations while addressing other resource needs (for example, recreation, fish and wildlife habitat, environmental enhancement, and Native American trust responsibilities). Reclamation will work to maintain our dams and associated facilities in fair to good condition to ensure the reliable delivery of water. Reclamation will strive to meet or beat the industry forced outage average to ensure reliable delivery of power. Reclamation will reduce salinity by preventing an additional 21,000 tons of salt from entering the water ways.

Moreover, the fiscal year 2007 budget request demonstrates Reclamation's commitment in meeting the water and power needs of the West in a fiscally responsible manner. This budget continues Reclamation's emphasis on delivering and managing those valuable public resources. Reclamation is committed to working with its customers, States, Tribes, and other stakeholders to find ways to balance and provide for the mix of water resource needs in 2007 and beyond.

CONCLUSION

Mr. Chairman, please allow me to express my sincere appreciation for the continued support that this committee has provided Reclamation. This completes my statement. I would be happy to answer any questions that you may have at this time.

Senator DOMENICI. Thank you very much.

I note that Senator Inouye arrived. Every other Senator had an opportunity to make a comment, Senator. If you would like to make one, you are welcome.

Senator INOUYE. Mr. Chairman, I thank you very much. I came by to thank the Commissioner for his service to our country and to our people. Thank you very much.

Mr. KEYS. Thank you.

Senator INOUYE. I wish the very best, sir.

Senator DOMENICI. Thank you very much, Senator Inouye.

Is any Senator on an urgent time frame, any more urgent than I?

Okay, I will ask a few questions and then—did you want further testimony or are we finished with the executive branch?

All right. Commissioner and Secretary, obviously you must know that I am very concerned about the drought in the West, in particular in New Mexico and the Southwest. The information that I have seen shows that the current snow pack is less than anything ever seen by current measurement system that was installed in 1980 in the Sangre de Cristo Mountains. It is possible that there will be no runoff from the Sangre de Cristo, which feeds the Santa Fe, the Pecos, the Canadian Rivers.

The most recent information that I have seen shows Pecos runoff estimated at 4 percent, Rio Grande 26, Zuni will get 1 percent of the normal runoff of Blue Water Lake. These are absolutely grim statistics. It is not like I am putting these to you expecting that you have solutions or that you are the cause. Neither. It is just a terrible statement of reality.

What is your assessment of the drought situation in the West and where do you anticipate the greatest impacts this year? Is there any assistance that the Bureau might offer to mitigate these impacts? What would drought contingency planning entail, and what triggers Reclamation to pay for water hauling versus drilling emergency wells? I put that all in one package, but I think that you understand what I am talking about. Could you start, please, and answer them?

Mr. KEYS. Mr. Chairman, the weather situation in the West is reversed from what it was last year. Last year, we had a wet Southwest and a dry northern tier. This year, we have a good wet northern tier and the conditions in the Southwest, the southern plains and the southern Rockies, are extremely poor.

Your characterization of the Middle Rio Grande and the Pecos is what the forecasts are showing. Certainly, we are trying to see how much water we have in storage. In the Rio Grande Basin, we are about 30 percent full in the storage space, and we are trying to see how long that water will last.

We are also purchasing water to be sure that we have enough for the silvery minnow in the Middle Rio Grande, and we have the water for the prior and paramount rights for the Pueblos set aside.

So with that said, what can we do to help? Title I of Public Law 102–250 expired last year. The Title I program allowed us, with proper appropriations, to do some temporary work on the ground. The only permanent facilities that could be done was the construction of wells, but it helped folks get through. A good example would be hauling water to some of the reservations.

Title I ran out, and we would certainly welcome the opportunity to work with you and your committee to get that renewed.

The Title II program gives us the ability to plan with the States and other entities to deal with the drought and to put plans together to find other water. We would certainly look forward to working with you on reauthorization of the Title I, and then, if we get the requests from States, to help them put drought contingency plans together.

Senator DOMENICI. We are working with you now on trying to put that in the supplemental appropriation.

Mr. KEYS. Great. Thank you very much.

Senator DOMENICI. Do you know anything about that, Mr. Secretary?

Mr. LIMBAUGH. Mr. Chairman, no. I do know a little bit about the drought and, being a former watermaster and manager of a river in Idaho, it always pays to get ahead of these things before they happen. The work that we have done with the Middle Rio Grande Conservancy District to enhance their ability to manage water more effectively and efficiently will help them in managing this horrible drought that they are about to experience. So we do believe, Senator, that having both proactive and reactive parts of this are extremely important.

Senator DOMENICI. Well, I have two more and I will be as quick as I can.

Last week, I was made aware of a serious water situation in the Ruidoso and Ruidoso Downs, New Mexico, area. The city council recently voted to initiate phase 4 water restrictions, the most severe they have ever had. The Downs has been under water rationing since 2002. Its Reclamation is aware of the water situation. We are wondering if there is any immediate help that Reclamation can offer these two communities? Do you know about them and is there any?

Mr. KEYS. Mr. Chairman, we were made aware of this situation about the same time you were last week. We do not have any projects in the area now, but our folks are working with your staff and the local folks to see if there is some help that we could make available to them.

Senator DOMENICI. It is my understanding that some of the provisions of the Reclamation State Emergency Relief Act have expired, and you indicated that. Assuming that we address this legislative issue, do you have any idea how much funding you would anticipate that Reclamation could utilize based on known and anticipated drought problems? We need that soon and I assume we are working on it together. Is that a fair assessment?

Mr. KEYS. Mr. Chairman, it is. Title I is the one that we need to be reauthorized. Should it be reauthorized, we could use around $4 million to help address problems out there. In our proposal—Title II is still authorized, and we have about $476,000 in our proposal for Title II, planning for the future drought.

Senator DOMENICI. I am going to hold on a question on advanced water treatment technologies, desalinization, and just see how we are doing in your opinion. You have got an initiative. We just wonder whether it is of the kind and stature and structure that we should count on for the future.

With that, I yield now to—Senator, are you ready on your side?

Senator ALLARD. My side is ready. I have no questions.

Senator DOMENICI. Senator Craig, then Senator Allard.

Senator CRAIG. Thank you very much, Mr. Chairman. Mr. Chairman, when Commissioner Keys was nominated I asked him that on his watch a Klamath Basin situation should never occur again and he assured me that to the best of his ability that would not happen, and it has not happened. But most importantly, I think 2025 has come out of some of those realities as to how we manage an overallocated resource in light of the demands being put on it, whether it is for endangered species or just simply expanded use, and how we get there.

I guess, Commissioner, my question of you and the Secretary both would be: When we look at a report of this character and the idea of officially authorizing an approach like this, how do you see it laying out over a period of a decade and the kinds of resources that would be required of the budget, if you will, to accomplish what is outlined in this kind of effort?

Have you looked at it from a decade overview as to where it takes us and what we gain from it and how much it will cost?

Mr. LIMBAUGH. Mr. Chairman and Senator Craig, we have been amazed at the interest in the challenge grant program, with each year bringing over $100 million in projects requesting Federal matching funds. We cannot begin to get to all of them. So the needs are out there.

The other thing we see that is progressive about this Water 2025 approach, is that it targets areas of the West where we can predict conflict and crises. We can predict problems, and try to get ahead of them before they become the next Klamath Basin, where we would have a problem with converging demands causing a huge disruption in water supplies to someone.

A decade of Water 2025 at any level of funding would be extremely helpful in these areas. We cannot say how much, once we get to the point of having the program up and running, how much more, how many more projects would be flushed out, how many solutions would be found that would need the seed money that 2025 and the challenge grant program provides. But we believe that getting ahead of these problems will produce even more solutions in other areas of the West that currently may not realize that they have problems.

Having that program in place, having a proactive look, managing for the future and providing the seed money, especially in tight budget times where we have limited funding, we believe is a very dynamic way to deal with the problems that maybe we cannot even predict at this point. But we can predict some problems now that we can effectively deal with.

Mr. KEYS. Mr. Craig, I think there are two things to add to what Mark said. One is that the Water 2025 program gives us the ability to work with water user groups to provide water through conservation to the new needs created by exploding populations, new industry, new endangered species needs, and at the same time, protect the basic water right of the irrigation folks who have the water right to start with.

The Water 2025 program gives them the mechanism to make that water available. It also lets us work with conservation and gives us time to see where there may have to be another infrastructure built. In other words, whether it is a dam, reservoir, desalination plant, or a recycling facility, there is a need for more infrastructure. Water 2025 gives us the time to take care of the immediate needs and plan for those future requirements.

Senator CRAIG. Well, I think the challenge grant and the approach you are using is an exciting one and it fits in a way that I think some of us who look at the traditional funding approaches of the Bureau of Reclamation may not have understood, and that we are dealing with a highly developed region of the country today, not one that needs to be developed, not one that needs the water

before it can develop. The world is significantly different in the Bureau regions where you have always been and been active. And there is money out there now and the opportunity to cost-share and/or to grant and/or to guarantee, all of those kinds of tools allow private sector money to be employed at a much higher level, I think.

I think your overview of that is valid, because what I am hearing out there—it is just like I think we got a chunk of money for recharge into the aquifer and yet the irrigation districts and all of that are very willing to pony up and participate when we have those kinds of grants.

So I think when we look at our budget challenges here we can leverage a public resource from this level in a much more expanded way through that kind of an approach. I thank you for that. It makes a lot of sense.

DAM SAFETY AND AGING INFRASTRUCTURES

I am concerned about, obviously, dam safety and infrastructure aging. I mentioned that in my opening comments. I also understand the reality of budgets this year. Mr. Chairman, the good news in my region of the country versus yours is we are probably having almost one of the wettest winters on record. The flip-flop that the Commissioner and the Secretary have talked about has occurred. It has flipped out of Idaho and the Inter-Mountain West and landed in the Southwest. We are in a weather pattern out there right now, though, that seems to be taking moisture across the whole region at a fairly heavy rate. It is certainly going to enhance what we already have and it may help you some.

But in all of our basins that are overallocated, and I suspect every one is now, excess water—it is interesting. Idaho is going through an interesting situation at this moment. We are dumping water. We are spilling at a rate that, a lot of Idahoans are stepping back and looking at that and saying: You know, we ought not be doing that; we ought to be spilling that throughout the season, if you will, for enhanced water quality and downstream water quality, than seeing it all go out, if you will, at this moment—which speaks to something you mentioned in passing as a combination of a lot of ideas, Commissioner, and that is increased storage. The West is going to have to deal with that at some time in the future, at our continued rate of growth. We can conserve, yes. We can spread, yes. We can use less, yes. But in reality you cannot populate at the rate that we are populating out there without trying to figure out how to expand a resource and add to it.

Thank you all very much.

Senator DOMENICI. We look forward to your first proposal at that time.

Senator CRAIG. It will come.

Senator DOMENICI. All right.

The Senator from Colorado.

Senator ALLARD. Mr. Chairman, thank you.

I want to follow up a little bit on my opening comments. I just want to pose this question to the Bureau. Why does the agency not believe that they should play a role in the rehabilitation of federally built and federally owned projects?

Mr. KEYS. Mr. Chairman, Mr. Allard, we work very closely with the irrigation districts. We work with them on annual reviews of their maintenance and their operation. We actually work with them on any deficiencies that are there. I would tell you that there are no critical deficiencies that are left untreated. In other words, there is no backlog of critical maintenance.

There are some things that should be taken care of, and we work with districts to help them manage their reserve funds to take care of those. Original contracts that all of those districts signed called for operation, maintenance, and replacement, and we work with the districts.

It is true that we do not have some of the old programs that we used to have such as the rehabilitation and betterment program, the small loan program, or the drainage and minor construction program. They were good programs, but they are not available any more. Certainly, we work to minimize the need for large expenditures, but sometimes it takes that. We try to find the money.

The bill that Mr. Craig talked about, the Rural Water bill, had a loan guarantee provision. Mark and I are working with the administration to have an administration bill that would accommodate that. Certainly, it is a way to help some of those districts address some of those problems.

Senator ALLARD. Now, based on just what you said, apparently you had a different approach than today, when you said you had a rehabilitation program. I suppose when you had that rehabilitation program you did not consider rehabilitation as being the same thing as operation and maintenance, and now my understanding is that within the Department you consider rehabilitation as the operation and maintenance.

Why did that change happen? Maybe could you elaborate on that a little further for me, please?

Mr. KEYS. Mr. Allard, in the old days when we had the rehabilitation and betterment program, the districts were still responsible for rehabilitation. When there was a need, they went to Congress to get a bill passed to provide the money for rehabilitation and betterment. However, they were still responsible, so they entered into repayment contracts.

Senator ALLARD. I see.

Now, if a project is willing and able to do rehabilitation work, but simply needs funding, does the Bureau object to being a pass-through agency for that funding?

Mr. KEYS. Mr. Allard, I am not sure what you mean by "pass-through." The loan guarantee program that we have proposed would let us co-sign the loan and use the facility that is owned by the Federal Government as collateral. They would benefit from a low-interest loan that could be made available through the Department of Agriculture, so we would back it up with the district.

Senator ALLARD. I am going to change over now to a problem area that I have in the State of Colorado, Leadville. It was the source of a lot of silver mining there and there is a lot of just natural lead in the soil, and as a consequence of that the drainage there from that particular part of our State has been classified as a Superfund site. I have a letter here from the State of Colorado trying to get the Environmental Protection Agency and the Bureau

of Reclamation to work together, as well as the Colorado Department of Public Health. According to this letter, basically you agree with the effort to try and work together as a group. The only thing is that you need to obtain some authorizing language in order for you to carry on your functions.

I would hope that maybe your office can work with us and see if we can come up with some authorizing language that would allow for that to move forward and get that whole thing off dead center right now.

Mr. KEYS. Mr. Allard, we would be more than happy to do that. We have been working closely with the State and EPA on the Leadville Mine drainage problem, and certainly, we would work with you to develop the right legislation.

Senator ALLARD. Our constituents in Colorado expressed a great deal of concern regarding the threat to Colorado's municipal water supplies, particularly the western slope reservoirs, due to a huge amount of fire danger from bark beetle-killed trees nearby. We have got some parts of the bark beetle where it just literally is wiping out entire forests. The Colorado River drainage, a lot of it comes out of those areas, some of it out of the North Platte.

My question to you is does the Bureau have a position on the threat to municipal water in Colorado? And more importantly, do you see the need for protective or other measures to reduce such threats?

Mr. KEYS. Mr. Allard, we work very hard to protect the watersheds above our reservoirs from development. When there is fire damage, we work with the Forest Service or BLM to do rehabilitation work, so we do not get the big influx of sediment that takes up the storage space.

We and the National Academy have just launched a review of some forest management practices, and that could be part of the study. Otherwise, we take it on a case-by-case basis and work with the local Forest Service and BLM.

Senator ALLARD. That bark beetle problem in our State, it has really been—I have been up to Alaska and seen whole watersheds wiped out. We are facing the same thing. It is not as obvious because the trees have not turned rust yet, rust-colored, but it is coming, and it is all over the West. Whatever you can do to help us address those issues and get these things moving and giving some thought about the impact of the bark beetle I think would be much appreciated. I know that Senator Craig has some of those issues also in Idaho, and probably in New Mexico.

Senator CRAIG. If the Senator would yield, when you go through these severe drought cycles and you stress trees in the way they have been stressed in the West, what follows is a beetle epidemic, and we are now into that cycle. We may be back into a wet cycle on the Rocky Mountain front and even in Idaho, but that does not mean the beetles will stop.

So we have these huge watersheds that are now dead and we are trying to get in them to clean them, revitalize them, by thinning. And of course we are being—we are head on head, if you will, with many of our environmental community groups. But what then follows a dead forest is a fire, and you are going to get total water-

shed wipeout, and then you have got major water quality problems of the kind you are talking about.

Senator ALLARD. Soil erosion, the whole works comes with that, silt problems.

Mr. KEYS. Mr. Allard, Mr. Craig, our Department has been one of the champions for the Healthy Forests Initiative, and certainly, the bark beetle is a big part of that focus. We have worked very closely with the Forest Service and with the Bureau of Land Management. Yes, we have several million acres that we manage also. Certainly, the Healthy Forests Initiative is trying to deal with the bark beetle problem.

Senator ALLARD. I have just one more question, Mr. Chairman, if I might.

A little over a year ago, the Bureau did a cost look-back study on the Arkansas Valley Conduit. That is a pipeline that runs out of the Pueblo Reservoir and goes down towards Kansas. However, to date the study has not been released. Can you tell me what the holdup is and when we can expect to see that study?

Mr. KEYS. Mr. Chairman, Mr. Allard, we are still working on the cost estimate for that study. As you know, cost estimates these days are almost a pariah in our construction programs, and that is not just unique to Reclamation. We anticipate having that done this summer.

Senator ALLARD. Thank you very much.

Thank you, Mr. Chairman.

DESALINATION AND WATER TREATMENT TECHNOLOGIES

Senator DOMENICI. Thank you, Senator.

Well, I am going to close on a little bit of a downer note for you, on the desalinization and advanced water treatment technologies. I think you know that because of my position as subcommittee chairman of the Energy and Water Appropriations Subcommittee I have tried very hard to pursue with vigor desalinization and also arsenic cleanup. But the Bureau manages a diverse water treatment research program funded through five budget items, including Reclamation research and development budget, Water 2025, the Yuma Desalting Plant, and by the end of 2006 the Tularosa Basin facility will be complete.

These programs have the potential to expand the Nation's water supplies and contribute to solving numerous current Reclamation challenges, including providing water for rural communities, reducing the concentration of salt and selenium in irrigation return flows, and improving endangered species habitat, and providing increased supplies for all water users, as we see it in terms of the potential application of the technologies that are being developed.

This huge benefit is dramatically undermined by what I see as a lack of coherent strategy, with clear goals for Interior-sponsored activities, integration of the multiple programs with Reclamation, and cooperation with other agencies, including the USGS, Department of Energy, and the Office of Naval Research—kind of a freak to the mix, but it turns out it has a lot of assets and it has a genuine and sustained interest in the basin that we are working on by coincidence. We have pushed them there and they are working at it with a lot of money.

Over 8 months ago, I asked the Bureau to develop and present a coherent strategy for water treatment research and development. I have not yet received that strategy. Does a strategy for the desalinization and related research exist and what is it?

Mr. LIMBAUGH. Mr. Chairman, I will take a whack at that. Currently, we are working on several fronts to provide you a coherent strategy. First of all, we are working with OMB to refine the strategy that we have proposed, that would help coordinate those efforts and set priorities. We do have the multifaceted approach and basically the highlight would be the research and development grants through the 2025 program looking at the next generation of technologies.

But also, the Tularosa facility, which will be complete in 2007, the first part of 2007, in the fiscal year 2006 budget year, is——

Senator DOMENICI. When will it be complete?

Mr. LIMBAUGH. January 2007.

Senator DOMENICI. January 2007?

Mr. LIMBAUGH. Yes, with the funds that we have in the 2006 budget.

Senator DOMENICI. Turnkey, ready to go, open?

Mr. LIMBAUGH. Yes, sir.

We also have in the 2007 request the operations and maintenance for that facility. So we are looking at finding a partner for that facility and working on a business plan that will be a sustainable use of that facility within the research and development component.

We also have worked with the National Academy of Sciences and have initiated a study, a follow-on to the road map that will look at Reclamation's programs and also others to find the coordinated strategy that will be blessed by the National Academy, that will hopefully be the long-term look at how desalination can work, what the role of the Federal Government will be in most efficiently managing and looking towards the future with that technology.

We do believe that the new technology, the new generation of desalination, is important to the West and it is very important to many regions of the West, and specifically in using not only ocean desalination but brackish ground water, on a more cost effective basis than what it is now.

John, do you have anything?

TULAROSA AND HURRICANE RELIEF EFFORTS

Mr. KEYS. Mr. Domenici, let me give you a real success story on Tularosa. Last August 29, when Katrina was bearing down on Louisiana——

Senator DOMENICI. I understand.

Mr. KEYS. We got the call from the Corps of Engineers saying: "How can you help us?" The hurricane hit on Monday. Monday afternoon, we got the request from the Corps to help out with water supply in the area. Wednesday afternoon, we had a lowboy from Las Cruces arrive at Tularosa. They put two of the desal units that we were testing at the facility on the truck. Friday afternoon, they hit the ground in Biloxi. Saturday morning they were producing 200,000 gallons a day of water. That is enough to serve about 50,000 people.

They also did that at the regional medical center there. When Rita came through, they took it down to the air base. After Rita passed through, they came back, set it up again, and it operated for about 2 months, 24/7, and produced water for about 50,000 people. When it was done, they put it on the truck and took it back to Tularosa.

Right after that happened, we had requests from the National Rural Water Association on how they may purchase four of those units, station them around the United States, so that the next time we have an emergency like that they are ready to go. This is a real success story from some of the work at Tularosa.

Senator DOMENICI. That is a very good example of carrying out this project. But that is not the whole story. The question is do we have in place what experts would tell us is a center that can pursue vigorously all phases or multiple phases and aspects of the problems still remaining with desalinization? Maybe we are not on the right track. Maybe it is too little of a facility. Maybe it is—who is going to tell us?

Is the Academy going to tell us, in your opinion? Are the national laboratories going to tell us? I do not believe you have the expertise to tell us that. You are managers, in a sense; is that correct?

Mr. LIMBAUGH. Mr. Chairman, that is correct, and that is why we have tried to go with the Academy study and we are trying to include the partners that we have worked with in looking for a managing entity for the Tularosa facility in New Mexico. We think that the strategy of having the National Academy of Sciences review the Federal and private sector roles for the future, would give us the needed impetus to implement the road map and look to the future in a much more sound, sustainable manner.

Senator DOMENICI. I might say to my friend, the word "Tularosa" keeps coming up and one might wonder what is that all about. Well, actually there is a rather large underground sea of salty water and that basin is called the Tularosa Basin.

Senator ALLARD. I see, because I was thinking——

Senator DOMENICI. There is a little town called Tularosa, but it is just a small little village.

Senator ALLARD. Mr. Chairman, I was also thinking that if this is surface water desalinization, I think certainly—and this will not fit in, I guess, now that I know where you are going. But one concern is that we have dynamics happening on the surface that adds to salinated water supply. We have plants, for example the tamarisk, which is salt cedar, which adds—not only do they drink a lot of water, but they cause the river to become more saline, and as a result of that I think it contributes a lot to salination. This probably would not be covered by that study, but certainly I think—I was going to bring that up after your discussion in regard to this question. But now that I more thoroughly understand where you are driving, Mr. Chairman, we will bring that up at another time.

Senator DOMENICI. So now we are going to have to get from you this solid and final recommendation as to what that facility—how much did we invest in the facility that we keep alluding to?

Mr. KEYS. Mr. Chairman, about $16 million.

Senator DOMENICI. One-six?

Mr. KEYS. Yes.

Senator DOMENICI. It is supposed to be a place where you can come and do your research, is that not correct?

Mr. KEYS. Yes, it is.

Senator DOMENICI. As I recall, a permanent facility. You make arrangements, bring your best technology, and test it out there?

Mr. KEYS. Exactly.

Senator DOMENICI. So the whole question is how important is that to the pursuing of a program.

Mr. KEYS. We think that it is very important. We are working with other agencies that want to test there. This summer, there will be a request for proposals for a contract to manage a plant, do a business plan, and attract folks.

Senator DOMENICI. I think one of the most important long-term things you are doing is to determine whether you are going to be an active, vibrant player in desalinization. We will be having hearings concerning reorganizing the Bureau. Does desalinization fit with Reclamation's mission? Or is that something that should be elsewhere?

I do not know. We did what we could do. It is obvious we have truncated it on there because of our interest, and a very good interest, I think, without any question.

I also want to close by just complimenting you and many on what has happened with the minnow in the Rio Grande. We start a year with a much different situation than we have ever had before, in that the play now between the stakeholders is no longer what it was before. The effort now is to create a completely different kind of habitat for bringing the fish through the water, in a sense, rather than letting the water flow, flow, flow, flow, and get lost as it is taken downstream to the fish.

You would have been amazed, Commissioner. The latest effort was the Interstate Streams Commission, a very powerful entity, made a commitment to this. They came up with a very large piece of equipment that they put in this very dry river, and what they did is they, with full environmental approval in advance, they moved it slowly upstream and provided pits, if you could imagine, deep pits, so that as they moved up 4 or 5 miles they made water holes, so as to speak, for the minnow. An experiment, a test run.

They then put minnows that we have raised, which nobody has complained about, planted them. That has been their contribution to what others have done by creating inlets, where you just actually create an inlet on the side of the place, of the river, and you plant these fish there and they live in these inlets. They cannot get out too easily and so they stay and propagate and have water where there is water, instead of going 70 miles down to Soccoro, where you have been to see that little dry hole.

So all that together, you know, shows how difficult and how much hard work people will do. We have really tried. We hope this drought does not make all that for naught. We have alluded to it. It could.

ADDITIONAL COMMITTEE QUESTIONS

All right. I have remaining questions on CALFED, Title XVI, and Animas-La Plata. They will be submitted. Answer them in due course and we will see.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED TO MARK LIMBAUGH

QUESTIONS SUBMITTED BY SENATOR PETE V. DOMENICI

DROUGHT

Question. Secretary Limbaugh, Commissioner Keys, I am extremely concerned about drought in the west and particularly in New Mexico and the southwest.

The information that I have seen shows that the current snowpack is less than anything ever seen by the current measurement system that was installed in 1980 in the Jemez and Sangre De Cristo Mountains.

It is possible that there will be no runoff from the Sangre De Cristo which feeds the Santa Fe, Pecos, and Canadian Rivers. The most recent information that I have seen shows the Pecos runoff estimated at 4 percent, Rio Grande 26 percent, and the Zuni will get 1 percent of normal runoff in Bluewater Lake.

These are grim statistics. Unless we get unusual rainfall, the situation will be more critical next year. What is your assessment of the drought situation in the West?

Answer. We share your concerns. The hydrologic conditions of the major basins of the Western United States can be characterized by contrast. The northern basins—such as those in the Pacific Northwest, northern Rockies, northern Great Plains, northern California, northern Nevada and northern Colorado are projecting snowpack and spring runoff levels at well above normal. Furthermore, due to significant storms over the past several weeks, Nebraska and Kansas have seen significant improvements in their hydrologic conditions.

In contrast, despite significant rain and snow over the past week in New Mexico, southern Colorado, Oklahoma and Texas, the Southwest, Southern Plains and Southern Rockies have had below-normal levels of precipitation this winter and all these areas potentially face serious drought conditions this spring and summer.

Question. Where do you anticipate the greatest drought impacts for this year?

Answer. We expect the most significant impacts in New Mexico, Texas, Oklahoma, and Arizona.

Question. What assistance can the Bureau offer to mitigate drought impacts?

Answer. If reauthorized, Title I of Public Law 102–250, the Reclamation States Emergency Drought Relief Act of 1991, as amended, could provide authority for construction, management, and conservation measures to alleviate the adverse impacts of drought, including the mitigation of fish and wildlife impacts. Additionally, Title I could provide for emergency response and allow Reclamation the flexibility to operate its project facilities in a manner that would allow the most efficient use of limited water supplies.

Question. What would drought contingency planning entail?

Answer. Drought contingency planning is a plan for the future that details what activities an entity would engage in for the prevention or mitigation of drought impacts. The plan would identify opportunities to conserve, augment and make more efficient use of water supplies.

Question. What triggers Reclamation to pay for water hauling versus drilling emergency wells?

Answer. Section 101 of Title I of Public Law 102–250, the Reclamation States Emergency Drought Relief Act of 1991, as amended, provides that the only permanent facilities for drought mitigation are the drilling of wells. All other actions must be temporary in nature. Water hauling would be considered a temporary action allowable under Title I. One action is not preferred over the other. Decisions on which cause of action to take are based on local water conditions, costs, and timeliness among other factors. Should Title I of Public Law 102–250, the Reclamation States Emergency Drought Relief Act of 1991, as amended, be reauthorized, both activities could be carried out.

Question. Last week, I was made aware of the serious water situation in Ruidoso and Ruidoso Downs, NM. The Ruidoso City Council has recently voted to initiate

Phase IV water restrictions (the most severe). Ruidoso Downs has been under water rationing since 2002. Is Reclamation aware of the water situation and is there any immediate help that Reclamation can offer these two communities?

Answer. Our understanding from discussion with the State of New Mexico is that the Village of Ruidoso could benefit from either repair of certain existing non-operational wells or drilling of additional wells. Should Title I of Public Law 102–250, the Reclamation States Emergency Drought Relief Act of 1991, as amended, be reauthorized, Reclamation would be capable of working with the Village of Ruidoso and the State of New Mexico to assist in either effort.

Question. Does your budget request contain any funding for drought assistance in fiscal year 2007?

Answer. The fiscal year 2007 budget request includes $475,000 for drought activities.

Question. It is my understanding that some of the provisions of the Reclamation States Emergency Relief Act have expired. Assuming that we address the legislative issues, how much funding would you anticipate that Reclamation could utilize based on known and anticipated drought conditions for the remainder of fiscal year 2006 and what would be the needs for fiscal year 2007?

Answer. We could effectively use approximately $7.5 million in fiscal year 2006. The funds requested for fiscal year 2007 in the amount of $475,000 would be sufficient, under present drought circumstances.

Question. How will the drought affect in-stream flow requirements for endangered species?

Answer. The drought will not modify the in-stream flow requirements, in that there is no exception for extreme drought conditions in meeting endangered species requirements. We will need to meet the flow requirements specified for a dry year. Because of drought conditions, more water will need to be released from storage to meet those requirements.

Question. What will Reclamation's role be in these issues?

Answer. Only Title I of Public Law 102–250, the Reclamation States Emergency Drought Relief Act of 1991, as amended, which expired on September 30, 2005, contains provisions to acquire water on a nonreimbursable basis as well as the drilling of new wells or rehabilitating existing wells. Reclamation must undertake the activities or contract for services.

QUESTIONS SUBMITTED BY SENATOR BYRON L. DORGAN

WATER 2025

Question. The President's budget proposes $14.5 million for the Water 2025 initiative, an increase of $9.6 million over fiscal year 2006 enacted. The administration developed Water 2025 to meet the challenge of preventing crises and conflicts over water in the West by increasing the certainty and flexibility of water supplies, diversifying water supplies and preventing crisis among users. The funding supports a competitive 50–50 challenge grants and the water system optimization reviews.

While I support the general concept of the initiative—preventing crises and conflicts over water—I feel the best way to prevent future problems is to adequately fund projects, like Garrison Diversion, that are aimed at addressing emerging water needs of our country.

In some ways, I think that the Water 2025 initiative is simply a way for the administration to fund its pet projects versus providing adequate funding for projects that have been vetted and approved by Congress and passed into law. In an August 2005 press release, the Department of Interior announced $1 million in Water 2025 grants for projects in Idaho, Kansas, Texas, Arizona, Montana and New Mexico. I could recommend several North Dakota projects that could have used that funding.

Did any of the $9.6 million increase for the Water 2025 initiative come from funds that were previously used to fund projects in North Dakota?

Answer. No, funding for water projects in North Dakota has not been decreased as a result of funding requests for the Water 2025 Program.

The development of rural water projects and the Water 2025 Program are both important. While completion of the Garrison Diversion will serve an important local need, the Water 2025 Program allows Reclamation to focus resources on geographical problem areas throughout the 17 Western States. With a tightening Federal budget, Water 2025 has proven that leveraging Federal dollars with our partners can provide on-the-ground improvements in water management infrastructure that can help prevent water crises where it is most likely to occur.

To date, Reclamation has awarded funding for 68 Challenge Grants in 16 States, including 62 projects by irrigation and water districts and 6 more by Western States. Collectively, the 68 projects represent almost $60 million in improvements, including a non-Federal contribution of $44 million and the Federal Government contribution of $15 million. In other words, for every dollar the Federal Government has invested, there has been about a $2.90 non-Federal investment.

Estimates in the project proposals indicate that the 68 projects could save up to 285,000 acre feet of water per year, collectively, once fully implemented. An acre foot of water is enough to supply a family of four for up to a year.

It is important to clarify that Water 2025 does not provide an opportunity for the administration to fund projects that it favors over projects that have been approved by the Congress. On the contrary, all Water 2025 Challenge Grant funding is allocated through a highly competitive and impartial process. Proposals are ranked by a panel of technical experts based on an established set of criteria that prioritizes projects resulting in real on-the-ground benefits, in terms of water conserved, better managed, or marketed, within 24 months from the date of award. Under this approach, only the very best projects are selected for funding, based on their technical merits.

The $1 million awarded to six States in August 2005 was part of the Water 2025 Challenge Grant Program for Western States. Any State agency with water management authority, located in the 17 Western States—including North Dakota—is eligible to compete for the $1 million. None of the $1 million was awarded to North Dakota because nobody from North Dakota submitted any proposals for consideration in the Challenge Grant Program. We look forward to working with the delegation to increase awareness of this program among North Dakota water interests, so that they can avail themselves of this competitive program.

Question. Isn't the first approach to resolving future conflicts and water problems to provide the funding in the first place for projects, like Garrison Diversion, that are aimed at doing exactly that?

Answer. Rural water projects such as those associated with the Garrison project account for much of the new project construction within Reclamation. The development of rural water supplies and the implementation of the Water 2025 Program are both tools that are necessary to prevent crises and conflict over water in the West—and both are Departmental priorities. The Department has worked closely with the Senate Energy and Natural Resources Committee, on a bi-partisan basis, to develop legislation to establish a formal rural water supply program in the Bureau of Reclamation (S. 895). This will enable Reclamation, in cooperation with States and rural communities, to better plan for and prioritize rural water supply projects. In recent years, we have worked closely with the State of North Dakota to implement the Dakota Water Resources Act. Despite the tight budget climate that we face, Reclamation has dedicated a significant amount of funding to this and other rural water supply projects indicating that completion of projects to meet the water supply needs of rural communities continues to be a priority.

Reclamation is responsible for delivering water and power throughout the 17 Western States, with a limited amount of Federal funding. Therefore, geographically broad-based efforts that leverage limited Federal dollars—such as the Water 2025 Program—are also essential to preventing conflicts and crises over water throughout the West.

Through the Water 2025 Challenge Grant Program, Federal funding is leveraged through cost-shared grants that are awarded on a competitive basis to eligible applicants in any of the 17 Western States—including North Dakota. Those eligible include irrigation and water districts, Western States, tribal water authorities, and other local entities with water delivery authority. The grants support projects that improve water conservation and efficiency through the modernization of existing water delivery facilities, and projects that involve water marketing. These types of projects are essential to meet competing demands for water, even in areas where new storage projects have been approved.

QUESTIONS SUBMITTED TO JOHN W. KEYS III

QUESTIONS SUBMITTED BY SENATOR PETE V. DOMENICI

Question. Are there other appropriate means for Reclamation to address drought conditions?

Answer. Public Law 102–250, the Reclamation States Emergency Drought Relief Act of 1991, as amended, is not the only program Reclamation uses in addressing drought issues. Title I of the Act, used for responding to emergency needs, expired

on September 30, 2005. The Water Conservation Field Service Program and the Water 2025 Initiative are examples of programs that are designed to prevent crisis and conflict over water in the West through advanced preparation and water management improvements. The Drought Act is a complimentary program to Water 2025. Proactive tools like this are critical because water shortages based on an imbalance between supply and demand, even in non-drought years, should catch nobody by surprise—they are inevitable. Even though we don't know when and where water supply disruptions will hit, we know they will happen. Short-term response actions are highly visible and important, but allocating our resources to longer-term, proactive, preventive efforts, such as through creating local drought management plans or the type of targeted actions envisioned by the Water 2025 program, will ultimately have more of an impact to alleviating the effects of droughts than short-term, last-minute fixes.

DESALINATION AND ADVANCED WATER TREATMENT TECHNOLOGIES

Question. The U.S. Bureau of Reclamation manages a diverse water treatment research program funded through 5 budget items including Reclamation's Research and Development Budget, Water 2025 and the Yuma Desalting Plant.

By the end of fiscal year 2006, the Tularosa Desalination Facility will be complete. These programs have the potential to expand the Nation's water supplies and contribute to solving numerous current Reclamation challenges including providing water for rural communities, reducing concentration of salt and selenium in irrigation return flows, improving endangered species habitat and providing increased supplies for all water uses in the United States.

This huge potential benefit is dramatically undermined by the seeming lack of a coherent strategy with clear goals for the Interior sponsored activities, integration of the multiple programs within Reclamation and cooperation with other agencies including the United States Geological Survey, the Department of Energy, the Office of Naval Research, etc.

Answer. We are developing a strategy which we feel addresses the concerns you have raised. It is undergoing the administration's review and upon completion, we will share the strategy with the Congress.

Question. Does a strategy for desalination and related research exist?

Answer. Yes, Reclamation has a draft strategy for advanced water treatment technologies.

Question. What is the strategy?

Answer. We are working within the administration to finalize development of our proposed strategy and would be glad to fully brief your office on it when it is complete.

Question. Can/will Reclamation participate in multi-agency activities to coordinate research funded through Federal, State and private investment?

Answer. Yes, we are currently coordinating our research efforts with the Interagency Consortium, Water Reuse Association and Desalination Task Force, among others. We have asked the National Academies to become engaged with us and provide further definition on roles of the Federal, State, and private sector research investments. Furthermore, Reclamation's Science and Technology program, which coordinates all of Reclamation's research and development activities, has a strong track record of coordinating with other research bodies to ensure prioritization of research, and to avoid redundancy.

Our participation with the Office of Naval Research in the development of the Emergency Unit for Water Purification (EUWP) and testing at the Tularosa facility allowed us to successfully deploy the EUWP after hurricane Katrina to the Biloxi Regional Medical Center. We provided highly purified water to the hospital and later treated water from the city's municipal system until the city's system was certified safe by the State.

Question. Can you assure me that the Tularosa facility will be completed this fiscal year within the budget provided by Congress for fiscal year 2006?

Answer. Yes, the Tularosa facility is scheduled to be completed in January of 2007 utilizing the fiscal year 2006 appropriations in accordance with the administration's fiscal year 2007 budget request.

Question. It has always been my intention that the Tularosa Desalination Test Facility be operated by a university in the southern New Mexico region and be positioned as the Nation's premier location for inland desalination and concentrate disposal research and development. The Bureau of Reclamation promised me a detailed strategy document by February of this year in which this role would be well articulated. I have yet to receive that document and feel that the Bureau is remiss in ful-

filling their promise. Does this strategy document now exist and does it anticipate this appropriate role for Tularosa by the end of calendar year 2006?

Answer. The mission of the Tularosa Desalination Test Facility is to be the intellectual powerhouse that attracts outstanding researchers to work on developing cost effective, efficient desalination technologies that can be applied to brackish and impaired ground waters—resulting in new supplies of usable water for municipal, agricultural, industrial, and environmental purposes.

We have developed a Business Plan for the Tularosa facility and are working to finalize it. We plan to meet with your office when it is complete.

Question. Additionally, the administration's budget appears to be inadequate to provide funding to operate and underwrite research at the facility in fiscal year 2007. How do you intend to undertake the research program outlined to my office with the current inadequate resources?

Answer. We believe that adequate budget for start-up, operation, maintenance, and research has been requested in the fiscal year 2007 President's budget within the Water 2025 program. The request will cover operation, maintenance, and will provide funding for research at the facility and elsewhere.

Question. It appears that USBR does not intend to undertake its role as the Nation's central research organization in desalination and reuse research given the current budget proposal. Has the Department of Interior decided to abandon this core competency?

Answer. The Department is committed to maintaining Reclamation's advanced water treatment research efforts with emphasis in resolving inland advanced water treatment issues and cost reduction through applied research, while ensuring that our research efforts are undertaken strategically, in the context of overall research and development needs in the water area.

Our fiscal year 2007 budget requests of $5,235,000 for advanced water treatment research, is to continue the pursuance of expanding useable water supplies. The request is divided among the internal and external Research and Development programs as follows: Desalination and Water Purification Research program (external), $25,000; Title XVI (external), $750,000; Water 2025 (external), $2,700,000; Colorado River Basin Salinity Control program, Title I (internal), $760,000; and the Science and Technology program (internal), $1,000,000.

Question. When will Reclamation be prepared to issue the call for proposals for the management contract for the Tularosa Desalination Facility?

Answer. We expect to be in a position to issue the Request for Proposals for the management contract of the facility by late summer 2006. Reclamation will have a managing entity on board in ample time for the opening of the facility.

TITLE XVI WATER RECLAMATION AND REUSE

Question. The budget request seeks $10.1 million for Title XVI projects. In light of the current backlog of needs, how was this request determined to be adequate and appropriate?

Answer. The President's request of $10.1 million for fiscal year 2007 is about $100,000 less than the amount requested for fiscal year 2006 for Title XVI. As in fiscal year 2006, the fiscal year 2007 budget request includes those eight construction projects that were included in the President's request in prior years. We continue to be aware that the desire for Title XVI funding is significant. However, Reclamation has many demands placed upon it, and we must balance all of our priorities within the funding limits we are working with.

Question. The Bureau was directed to review and report on those recycling projects deemed to be feasible under CALFED. To date, there has been no report provided to Congress. What is the status of this review and why has it not been forwarded to Congress?

Answer. Reclamation has completed its review of all reports and other documentation submitted by project proponents in response to our request for information for the report directed by Public Law 108–361; we transmitted the report to Congress on April 28, 2006. Of the submittals for projects that have not been authorized, 14 (7 each associated with SCCWRRS and BARWRP) were nearly complete, but lacked elements such as NEPA compliance. While these projects have the potential to meet requirements included in Reclamation's 1998 Title XVI Guidelines, we do not know how they would rank in priority if the Title XVI program were reformed as proposed in our February 28, 2006, testimony to the Senate Subcommittee on Water and Power. The remainder lacked many required elements. All project proponents have been notified of Reclamation's findings.

Question. What was the Bureau's request for Title XVI program funding that was transmitted to OMB as part of the budget formulation process?

Answer. The administration's budget request for Title XVI funding in fiscal year 2007 was $10.2 million.

Question. How were projects selected for funding?

Answer. For continuity purposes, Reclamation elected to request funds for the same projects that were included in the President's budget request in fiscal year 2006.

Question. Were the funding levels for each project determined to be adequate?

Answer. The funding level for each project was determined based on the amounts requested in prior years and the construction schedule of the project sponsors. We feel these levels are adequate given the many competing demands which are worthy of funding by Reclamation.

Question. The Title XVI program was established as a way to increase water supplies in the West by recovery of water that otherwise would have been wasted. Reclamation has never been a big proponent of this program. Yet it seems to be a natural fit with Reclamation's role of providing water and power to the West. How does Reclamation believe this program could be modified so that OMB and Reclamation would be willing to significantly increase budget resources for this program?

Answer. Reclamation discussed potential modifications to the Title XVI program before the Senate Subcommittee on Water and Power on February 28, 2006. Reclamation provided a drafting service to Congress that would accomplish many of these issues, and the administration is developing its own legislation for Title XVI reform that will be transmitted to Congress soon. Reclamation believes these proposed changes will make the program more competitive, better define project eligibility, and more effectively help reduce future conflicts and crises over water supplies in the West. Ultimately, our intent is to administer this program in conjunction with the Water 2025 program, to target resources to the areas of most critical need to proactively avert water conflicts by diversifying water supplies.

ANIMAS-LA PLATA

Question. Costs on the Animas-La Plata project increased rather dramatically after it was authorized. Will we be able to construct this project within the cost ceiling that we provided?

Answer. Current legislation authorizes the appropriation of such funds as are necessary to complete construction of the project facilities through 2012. Even though there is no legislated cost ceiling, we do have a construction cost estimate. The current base construction cost estimate of $500 million, indexed to October 2006 price levels, is $552 million. With the understanding that features not yet awarded will continue to be indexed, Reclamation believes the indexed base estimate is adequate to complete the Project, provided it is funded at sufficient levels to match construction capability and no unforeseen conditions are encountered.

Question. In the fiscal year 2006 Energy and Water Act we extended the timeframe for completion of this project to 2012. Does the funding request for this project allow you to meet this schedule?

Answer. Yes. The fiscal year 2007 budget request is $57.4 million. This request will continue construction of two of the Project's major features, Ridges Basin Dam and the Durango Pumping Plant and begin construction of a third major feature, Ridges Basin Inlet Conduit. The Project schedule was recently revised to reflect the funding level for fiscal year 2006 and the President's request for fiscal year 2007. Assuming funding levels in the out years at the fiscal year 2007 request level, construction of the Project could be completed by 2012, with Project closeout in fiscal year 2013.

QUESTIONS SUBMITTED BY SENATOR WAYNE ALLARD

REPAYMENT CONTRACTS

Question. Historically, the Reclamation Program does not flow from a single organic Federal statute. There have been various acts since the 1902 Reclamation Act which have shaped the program. Since 1939, every project has been individually authorized with its own terms and conditions. Given geographical and geological uniqueness, and varied construction dates, we find it difficult to believe all, or any, Bureau of Reclamation projects are identical. Therefore we ask: Are all repayment contracts identical?

Answer. No. All repayment contracts are not identical. Contracts are a mix of standardized and nonstandardized articles.

Reclamation has contracting authority under general Reclamation law, project-specific authorizations, and even contract- or contractor-specific authorizations.

Variations among these authorities lead to variations among repayment contracts. For example, the Reclamation Project Act of 1939 allows a maximum repayment period of 40 years (Public Law 76–260) (general Reclamation law); the Colorado River Storage Project Act allows a 50-year repayment period (Public Law 84–485); the Central Valley Project Improvement Act specifies a 25-year repayment period for irrigation repayment contracts (Public Law 102–575, Title XXXIV, section 3404(c)) without affecting repayment periods for municipal and industrial contracts (project-specific authorization); and the Congress specified a 60-year repayment period for the Yuma Mesa Irrigation and Drainage District (Public Law 84–394) (contractor-specific authorization).

Numerous other provisions can vary among repayment contracts, including the permissible uses of project water, water delivery schedules, where water can be used, and who is responsible for operating and maintaining facilities. Even among contracts made pursuant to the same authority, circumstances may lead to some variation, within whatever range the applicable law allows.

In the early 1960's, Reclamation recognized that there are some provisions standard to all contracts. These "standard contract articles" generally result from requirements of executive orders, rulemaking processes, or other laws mandating they appear in contracts.

Question. Are all projects under the same authorization?

Answer. All projects are not under the same authorization. While many prior to 1939 were under the general authorization provided in the Reclamation Act of June 17, 1902, Congress did, in some instances (for example the Boulder Canyon Project Act of 1928 (Public Law 70–642) and the Central Valley Project, California, and Colorado River Project, Texas (1937) (Public Law 75–392)) provide specific project authorization. Since 1939, Congress has provided more individual project authorizations to construct projects. However, pursuant to the Flood Control Act of 1944 (Public Law 78–534), Congress directed that project authorizations be approved by an act of Congress.

Question. Is it the opinion of the Bureau of Reclamation that all repayment contracts include "replacement" even when it is not stated in the contracts?

Answer. Reclamation contractors are required to pay for their appropriate share of operation and maintenance costs (O&M) (Public Law 63–170, Public Law 69–284, Public Law 76–280, Public Law 97–293). O&M costs are generally the costs necessary to operate a constructed project and make repairs and replacements necessary to maintain the project in sound operating condition during the life of the project. One of the standard articles for all contracts is the "emergency reserve fund" article. This article resulted from the demonstration that nearly every district, on occasion, requires funds to meet major unforeseen costs of operation and maintenance and repairs and replacement of the project works. While the article may be standard, the requirements for the fund amount are not. Guidance for the establishment of the amount of the reserve fund is found in Reclamation policy, which recognizes that not all projects are the same and, therefore, the amount of the reserve fund is established accordingly.

SAFETY OF DAMS

Question. The Safety of Dams program provides guidelines and financing for dam inspections. Therefore, are pertinent structures other than the dam itself given the same importance as the dam? If not, why not?

Answer. The Safety of Dams Program identifies (inspects) and evaluates issues and implements modifications to dams, if warranted, to reduce risks to the public. Dam inspections are part of a comprehensive risk management approach to limiting life safety risks downstream of dams owned by Reclamation.

Many other structures that are part of the Reclamation water resource infrastructure do not pose the same life safety risks, even though they may be critical features for assuring the delivery of project benefits. These structures are evaluated as part of Reclamation's Review of Operation and Maintenance (RO&M) Program. The RO&M program provides an excellent program for assuring the continued operation of Reclamation facilities. The Safety of Dam program addressing the potential life safety consequences associated with the failure of high- and significant-hazard dams requires a higher standard of risk management to assure the safety of persons living downstream of those facilities.

JACKSON GULCH RESERVOIR

Question. Jackson Gulch Reservoir, an off-river reservoir, depends on a canal system as relevant to the reservoir as the dam. Without the canal, the dam would be useless and unnecessary. The Animas-La Plata project will also be dependent on a

water carriage delivery system. What do we need to do to make Bureau of Reclamation realize the importance; and/or how can we begin a "Safety of Connecting Structures" program in order to preserve these systems?

Answer. Reclamation understands the importance of the canal systems and other features that are associated with its dams. These facilities are inspected by Reclamation professionals on a regular frequency under the Review of Operation and Maintenance Program which was established in Reclamation in 1948. Observed structural or operational deficiencies are noted and recommendations are categorized based on significance and tracked until accomplished. Reclamation retains ownership of these facilities, yet the operation, maintenance and replacement of many facilities have been transferred to water user entities.

In the case of Jackson Gulch Reservoir, a feature of the Mancos Project, the Mancos Water Conservancy District is responsible for operation and maintenance, including repair, of all project facilities, as specified in their contract. Repair or replacement of the canal system is the responsibility of the District. The long-term viability of all Reclamation facilities, especially for transferred works, is critically dependant on the local project sponsors meeting their obligations to perform required Operations and Maintenance activities.

OPERATIONS AND MAINTENANCE

Question. What is the Bureau of Reclamation's official definition of (a) "operations and maintenance" and (b) "operations, maintenance and replacement"?

Answer. Within the context of managing Reclamation's water and power infrastructure, the operation and maintenance of project works involves a wide range of activities. These operations and maintenance activities encompass those actions necessary to achieve continued integrity and operational reliability in delivering authorized project benefits.

Additionally, as stated in Reclamation's "Report to the Congress, Annual Costs of Bureau of Reclamation Project Operation and Maintenance for Fiscal Years 1993–97", dated September, 1998, "the most visible maintenance tasks are the major repairs and rehabilitations, equipment and facility replacements, and facilities additions that are accomplished at every project over time." As such, the "maintenance" term includes "replacements" and, therefore, the definitions for both (a) and (b) as stated in your question are considered to be synonymous. Similarly, for contract administration purposes within Reclamation, replacements have always been included as part of maintenance responsibilities and costs.

BUREAU OF RECLAMATION'S MISSION

Question. What does the Bureau of Reclamation believe is their (a) current mission or purpose, and (b) their future mission or purpose?

Answer. The current and future mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public. The role of Reclamation is vitally important at this critical time, and in the future in the West. As the West experiences rapid double digit growth in many areas, the role of Reclamation in managing the critical infrastructure in a manner that balances the needs of agriculture, municipal and industrial, power users, recreation, fish and wildlife and endangered species is essential. In the Lower Colorado River Basin for example, the Secretary of the Interior is the water master. In that capacity, the Secretary is required to balance the needs of the Seven Basin States while maintaining the river. This includes river operations, facility O&M, water service contracting and repayment, decree accounting, and oversight of hydropower activities. Additionally, in Idaho, in the Columbia Basin, we are trying to meet the objectives of our projects and at the same time recognize the water rights and to enforce or actually coordinate and work with the compacts that have been done in the basin.

REHABILITATION

Question. Bill language gives evidence to the fact that as recently as the 1990's, Reclamation did support rehabilitation. (a) When did that change and why? (b) Does the Bureau of Reclamation see rehabilitation as currently outside of or futuristically not a part of their mission?

Answer. We believe you may be referring to funding of the Rehabilitation and Betterment Program, which was authorized in a 1949 Act, and amended/supplemented in 1950, 1971, and 1975. Under the program, Reclamation water users were able to obtain no-interest loans to rehabilitate and improve the Reclamation-owned irrigation facilities they operated and maintained. Although still authorized, loan funding of that program was discontinued in the mid-1990's (driven by limited appro-

priations at that time) and water users were expected to use their own resources or to seek private financing. Private lenders are often unwilling to lend to the water users, however, because project facilities can not be used as collateral; the United States holds title to the facilities.

As Reclamation's infrastructure continues to age, there will likely be a need for increased maintenance and major rehabilitations. Reclamation recognizes the importance of a preventive maintenance philosophy and the need for ongoing condition assessments of our facilities to identify and remediate deficiencies at an early stage. Through these efforts and applying effective technology and research in these maintenance activities, the service lives of these facilities can be lengthened and the need for major rehabilitation efforts delayed and/or reduced. Reclamation will continue to work cooperatively with water users in addressing these rehabilitation issues. Ultimately, local water users are responsible for the operation and maintenance of certain facilities (i.e., facilities transferred for operation and maintenance responsibility).

Question. Are the benefits derived from large projects perceived as more important than those of small projects and therefore worth funding?

Answer. No. Each project, large or small, has its own merits and issues.

Question. There is potential that projects will be forced to return O&M to Reclamation when they cannot fund replacement due to failure. What does Reclamation intend to do when projects begin to fail? And when this potential situation becomes reality?

Answer. Return of O&M to Reclamation is a possibility. At this point in time, we cannot predict what will occur other than Reclamation would examine the causes of failure, the potential consequences to the project sponsors and other factors such as the environment, and the economic merits of reinvesting in the project. We believe that the loan guarantee program as discussed above will reduce the likelihood of O&M being returned to Reclamation.

REPAYMENT CONTRACTS

Question. Our repayment contract states that we, the project operating entity, are entrusted to and expected to protect the Federal interest, i.e. the Mancos Project. Why are we trying to convince the Bureau of Reclamation to support our efforts?

Answer. Reclamation supports the efforts of managing entities to protect the Federal investment. In the case of the Mancos Project, the existing O&M contract specifies that the Mancos District is responsible for the operations and maintenance, including repair, of all project facilities.

Question. Why does Reclamation fear we are trying to "take away" from their budget? We should both be working toward the same goal.

Answer. Reclamation consistently supports and is committed to its projects as authorized by public law in accordance with legal contracts. For example, on the Mancos Project in Colorado, the contract between Reclamation and the Mancos Water Conservancy District states that the District will be responsible for operation, maintenance and rehabilitation of the project facilities rather than Reclamation.

Question. Very recently it was announced that Reclamation had saved several million dollars on a project and were able to lower their budget. Was it possible for them to re-route the savings and begin to address the rehabilitation problems surfacing? If so, why didn't they?

Answer. Unless the specific project in the question is named it would difficult to comment on how any project savings may have been used elsewhere or when the savings would have been realized. Reclamation is constrained in how it spends appropriated funds by public law and legal agreements. Transferring or reprogramming funds between projects is also subject to Congressional guidelines.

QUESTIONS SUBMITTED BY SENATOR BYRON L. DORGAN

OVERALL BOR FUNDING

Question. The administration has written that "water is the lifeblood of the American West and the foundation of its economy." Yet when the President released his budget earlier this year, he proposed a nearly $140 million budget cut for the arm of the government responsible for the supply and management of much of that water in the West, the Bureau of Reclamation. How will the Bureau of Reclamation address the growing water needs of the Western part of this country with even less resources than the previous year?

Answer. We believe the funding level is sufficient to address Reclamation's responsibilities related to the growing and changing water needs of the West. Through

collaboration and partnerships, we believe we can stretch limited Federal dollars further. For example, part of the funding in fiscal year 2007, is for the Water 2025 program that continues to focus on preventing crises and conflicts in the West, particularly in the problem areas identified on the Potential Water Supply Crises by 2025 illustration, May 5, 2003. The $14.5 million request will fund three program components: Challenge grants, water system optimization reviews, and research to improve water purification technology.

The $14.5 million includes a request of $9.7 million to continue the success of the Water 2025 Challenge Grant Program. The requested amount will help bring the funding more in line with the demand and with the critical need for projects that will stretch water resources.

In just 2 years since the inception of the Challenge Grant Program, Reclamation has funded 68 Challenge Grants to irrigation and water districts and western States, to address western water conflicts before a crisis occurs. Grants have been awarded in 16 out of 17 western States, potentially saving up to 285,000 acre-feet of water, once the projects are fully implemented. An acre-foot of water is enough to supply a family of four for a year.

The $14.5 million requested also includes $2.1 million for water system optimization reviews, a new component of Water 2025 to be introduced in fiscal year 2007. Funding for system optimization reviews will be awarded through a competitive process, much like the Challenge Grants. Through water system optimization reviews, Reclamation will work with willing irrigation and water districts and western States to identify options for maximizing efficiency and improving water management.

Finally, $2.7 million of the Water 2025 funding will be used to continue to fund research to improve and decrease the cost of water purification technology, including desalination. Water 2025 funding will be applied to competitive cost-shared grants for pilot, demonstration, and research projects to improve and test water purification technology.

Water 2025 represents one example where Reclamation is leveraging its budget to resolve water issues in the West through collaboration and partnerships during a time of limited Federal dollars.

RURAL WATER

Question. As you know, my top priority within the Bureau of Reclamation's budget is adequate funding for the Garrison project. A total of 155,000 acres of Ft. Berthold Indian Reservation land was taken for building the second-largest earth filled dam in America, the Garrison Dam. The water divided the Reservation down the middle. The Federal Government owes this tribe and others in North Dakota for its sacrifice for the Nation.

But this administration's budget once again fails to live up to that promise by recommending only $24.21 million for Garrison Diversion, a $3.1 million cut over the fiscal year 2006 level of $27.311 million. The President's request does not provide the necessary funding for the municipal, rural and industrial (MR&I) projects in the State. The Dakota Water Resource Act of 2000 authorized $200 million for the State MR&I program and $200 million for the Indian MR&I program. The President's fiscal year 2007 budget only provides $6 million for MR&I projects: $3 million for State MR&I and $3 million for Indian MR&I. The North Dakota Water Commission has identified a need of $36 million for MR&I projects in fiscal year 2007.

The President's budget proposal woefully funds Garrison Diversion. Why is the Federal Government turning its back on its commitments to the residents of my State?

Answer. The administration is not turning its back on the residents of North Dakota. The fiscal year 2007 President's budget request continues progress on the Garrison Diversion Unit while maintaining existing infrastructure and other on-going construction projects throughout the agency, during a time of limited Federal dollars.

Question. As you know, the BOR released its Draft Environmental Impact Statement for the Red River Water Supply Project on December 30, 2005. This draft listed 8 potential alternatives and the BOR had a 60-day comment period, which was extended until the end of March.

I want to thank the BOR for holding all the meetings around North Dakota to discuss the different alternatives contained within the draft plan. The State of North Dakota has identified their preferred alternative and it seems like the most feasible and cost effective plan put forward.

This plan would use a combination of the Red River, other ND in-basin sources, and Missouri River water. The principal feature of this option would be a pipeline

from the McClusky Canal to Lake Ashtabula that would release treated MO River water into the Sheyeene River. The pipe would be sized so peak day demands could be met by Lake Ashtabula releases. The option would include a biota treatment plant at the McClusky Canal and a pipeline to serve industrial water demands in southeastern ND. The biota treatment process would use various disinfection technologies.

Unlike the other alternatives, this plan would "only" cost $500 million. I say "only" because the other alternatives range from $600 million to $2.5 billion.

What, if anything, did the Bureau learn from all the meetings around North Dakota regarding this plan?

Answer. The proposed alternatives would use water sources in North Dakota and Minnesota. Public hearings were held in North Dakota and Minnesota to gather input on all eight (No Action and seven action) alternatives evaluated in the draft EIS.

The formal input received at these hearings can be categorized as follows: (1) support for the project; (2) support for the State's preferred alternative; (3) opposition to the project; (4) opposition to the State's preferred alternative; (5) opposition to interbasin water transfer; (6) concerns with transfer of non-native biota from interbasin water transfers; (7) concern that the identified need for water is too large; (8) concern that the Red River Valley residents live within their means (more water conservation, more drought contingency, more use of in-basin water sources); (9) concern expressed by Three Affiliated Tribes and Standing Rock Sioux Tribes that other features of GDU, specifically Indian MR&I, be completed before funding construction of any Red River Valley Water Supply feature(s); (10) concern expressed by tribes that diversion would negatively impact their water rights.

Question. Are you finished taking comments on this? If not, how long has the comment period been extended?

Answer. No, the comment period has been extended. The additional time will permit Reclamation and the State of North Dakota the opportunity to work cooperatively with the Environmental Protection Agency (EPA) to address and resolve issues raised by EPA.

Question. Is it still your intention to publish the final EIS in December of this year?

Answer. Yes. Reclamation plans to distribute the final EIS by December 31, 2006.

Question. From a preliminary standpoint, is the Bureau looking at any one alternative in particular?

Answer. No. We are going to evaluate all comments and data before identifying a preferred alternative.

Question. Is the State's alternative the most likely at this point and if so is the administration already engaging the Canadian government on potential concerns regarding the Boundary Waters Treaty Act? I know it may be premature, but I do not want the project held up based on unsubstantiated allegations regarding biota transfers.

Answer. Until all comments have been received and evaluated it is premature to assess any one of the alternatives as "most likely." Canada has participated in technical discussions on the Red River Valley Water Supply project but has not been engaged formally at this time. Reclamation has briefed the State Department on the issues associated with treaty compliance.

Question. And to that point, has the Canadian Government submitted any comments on the proposals? More specifically, has the Canadian Government indicated any alternative to what the BOR has proposed?

Answer. Although Canada was invited to participate on the Red River Valley Water Supply Needs and Options studies they declined to be a formal member of the team. Manitoba and Environment Canada participated as observers but did provide technical comments during the study process and on the draft Needs and Options report. Both Manitoba and Environment Canada are expected to comment on the draft EIS. At this time, Canada has not proposed any new alternatives. Their comments to date have made it clear that they oppose any interbasin water transfer, are concerned about potential transfer of non-native biota associated with a transfer of Missouri River water, and would like a reference to the International Joint Commission.

QUESTIONS SUBMITTED BY SENATOR DIANNE FEINSTEIN

FUNDING FOR FRIANT—NRDC SETTLEMENT

Question. The Department of the Interior is a party to the negotiations to settle the long standing litigation over the San Joaquin River. I'm aware that settlement discussions are confidential and have not been completed, but I understand that the Justice Department has told the Court that the Department expects negotiations to be substantially completed by mid-April.

If the Justice Department is correct in its assessment and the parties' settlement is approved by the Court, can we assume that you will begin your San Joaquin River restoration activities as soon as possible, including in fiscal year 2007, and if so, how would the Bureau fund such activities? A Settlement wasn't anticipated when the Bureau drafted its fiscal year 2007 budget request, so the request doesn't include funding for fiscal year 2007 restoration actions.

Answer. As you know, settlement discussions are continuing. If a settlement is eventually reached and if it is approved by the Court, Reclamation could be able to begin initial activities associated with the restoration activities outlined in the settlement using a portion of the Central Valley Project Improvement Act (CVPIA) Restoration Fund which has been identified in the 2007 budget request for use on San Joaquin River activities.

Question. What source of existing revenues (i.e. the Judgment Fund, CVPIA Restoration Funds, the Friant Surcharge, Cal Fed, or other Energy and Water appropriations) can be applied to this effort in fiscal year 2007?

Answer. There are a number of possible sources of funding. This is a matter under consideration in the confidential settlement discussions.

Question. As you know, Congressman Radanovich, Governor Schwarzenegger and I have all urged the Bureau to reach a settlement of this case. Now that the parties appear close to reaching an agreement, will implementation of a San Joaquin River settlement be a future funding priority for the Bureau?

Answer. The Department appreciates the effort that all of the parties to the litigation have committed to the settlement negotiations, and we remain hopeful that a settlement will ultimately be reached. Establishing funding priorities in any given year will, of course, require discussions with the Office of Management and Budget, as well as subsequent acts of Congress.

CALFED STORAGE STUDIES

Question. I strongly believe that with a growing population, global warming, and other challenges, California greatly needs new water supply. I understand that your current schedule is to finish the last of the four CALFED storage feasibility studies, for the Upper San Joaquin storage project, in July 2009.

Is there anything that I can do to get this study finished faster? If there is any potential delay in getting the approval of other State or Federal agencies, will you let me know right away so I can try to get the process moving?

Answer. We have been reviewing our schedules and believe that there may be opportunities to expedite the investigation such that all four studies including the Upper San Joaquin storage investigation could be completed by the end of 2008. These opportunities are dependent on the results of on-going technical studies as well as the level of cooperation we receive from our State partners and other State and Federal CALFED agencies and stakeholders. Based on our current schedule of tasks to complete the investigations, additional funding above the budget request is not required at this time to support expediting the schedule. We hasten to add that completion of these studies does not mean that the projects will be ready to begin construction; these are merely documents that will aid the Federal Government in determining whether these proposed projects are feasible and how they fit into broader nationwide priorities for investment.

ENVIRONMENTAL WATER ACCOUNT

Question. The administration asked for $10 million for the environmental water account in its fiscal year 2007 CALFED funding request. How critical is this environmental water account funding for avoiding or minimizing harm to the Delta smelt and other pelagic fish while delivering water to farmers and cities to the South?

Answer. The Environmental Water Account (EWA), authorized in the 2004 CALFED Bay-Delta Authorization Act, is a pilot water management program, and is integral to making balanced progress in implementing the CALFED program. It is designed to help protect and increase survival, and aid in the recovery of at-risk native fish species of the Bay-Delta, including the Delta Smelt, by strategically im-

plementing pumping curtailments at the Central Valley Project's Tracy Pumping Plant and the State Water Project's Banks Pumping Plant. Whether the actions of the EWA do contribute to the recovery of at-risk native fish populations is a question that remains unanswered.

Given the current situation regarding the decline of pelagic fish populations and ongoing investigations into the reasons for this decline, the EWA agencies, as well as many other concerned entities, have made this matter a high priority. A multi-year science effort was initiated in 2005 by the agencies involved in the Interagency Ecological Program to determine the causes of the Pelagic Organism Decline (POD) in the Delta. Part of this effort includes identifying the role, if any, that water project operations in the Delta might have had in the POD.

Additionally, the CALFED Science Program has already initiated the development of fish population models for the Delta that will increase our understanding of how certain actions in the Delta affect fish populations. The results of these efforts will likely increase our understanding of how effective the EWA program has been in helping Delta fish populations. Because of the current situation in the Delta, it is critical to have adequate fiscal year 2007 funding for the pilot phase of the EWA to help ensure sufficient water assets are acquired for fish protection and water supply reliability purposes.

LOWER TUSCAN AQUIFER WATER SUPPLY INVESTIGATION

Question. I have a strong interest in the Bureau of Reclamation supporting locally-led efforts to investigate the Lower Tuscan groundwater formation, which Congress funded with $2 million in the fiscal year 2006 Energy and Water Development Appropriations bill. Preliminary study results suggest the Lower Tuscan may hold as much as 30 million acre-feet of water.

While the potential water supply benefits of the Lower Tuscan formation appear to be substantial—with early California Department of Water Resources estimates forecasting as much as several hundred thousand acre-feet in new water available for agricultural, environmental, and municipal uses—additional technical work must be completed to determine how this resource can best meet regional and statewide water supply needs.

Commissioner Keys, I want to thank you for your support for this critically important initiative. I understand that the Bureau is working on a cooperative agreement with Glenn-Colusa Irrigation District to move forward on this project.

Can you update the committee on the Bureau's progress in moving forward on the Lower Tuscan work?

Answer. Reclamation is currently working with Sacramento Valley water interests, in particular with Glenn-Colusa Irrigation District (GCID), to develop a cooperative agreement that will include studies and investigations of the possibility of integrating the Lower Tuscan Formation into Sacramento Valley surface water supplies. This agreement will be a counterpart to the agreement between GCID and the Department of Water Resources for Proposition 50 funding for these same activities.

I would also point out that new groundwater supplies, while potentially representing a short-term expansion of water supply, and offering potential for conjunctive use (groundwater storage of surface waters), must be carefully managed to avoid groundwater mining. New groundwater supplies need to be part of a long-term, sustainable strategy for water use, and should not be used as a one-time windfall.

Question. When do you anticipate finalizing the cooperative agreement?

Answer. We expect to receive a completed proposal from GCID no later than June 14, 2006, and to enter into a Cooperative Agreement with GCID prior to the end of fiscal year 2006.

CALFED WATER USE EFFICIENCY PROJECTS

Question. I understand that the Bureau is now accepting grant applications from agricultural and urban water districts for $2.4 million from Congress's fiscal year 2006 appropriation for CALFED water use efficiency projects. Can you tell me about the types of projects you expect to fund, and how much water they could save to be used for other purposes?

Answer. Funding is available for agriculture and urban projects. Applicants for the CALFED Water Use Efficiency Grants Program must be local public agencies involved with water management (cities, counties, joint power authorities, or other political subdivisions of California) or incorporated mutual water companies.

To be eligible for financial assistance, a proposed activity must have a defined relationship to CALFED objectives. These objectives include: improving and increasing habitats, improving ecological functions for ecosystem quality, providing good water

quality, and reducing the mismatch between the Bay-Delta water supply and its current and projected uses.

Proposals that will be considered for funding are agricultural projects including canal lining, spill and tailwater recovery systems, automated canal structures, and evaluation of improved water efficiency, and urban projects that satisfy the implementation of the urban Best Management Practices, such as, residential plumbing retrofits, Commercial Industrial and Institutional water conservation efforts (water used primarily by hotels, restaurants, commercial/office buildings, manufacturers, and public service facilities), large landscape conservation, metering, and system audits.

WATER RECYCLING PROJECTS AND TITLE XVI

Question. In 1999, California water districts submitted the San Francisco Bay Area Regional Water Recycling Program feasibility study to the Bureau of Reclamation. This regional plan consisted of 19 projects that if constructed would produce 125,000 acre feet of recycled water by 2010. In 2001, California water districts submitted the Southern California Comprehensive Water Reclamation and Reuse feasibility study to the Bureau. If constructed, the 34 projects in this regional plan would generate 451,000 acre feet of recycled water. The Bureau has been reviewing these studies for the past 7 and 5 years, respectively. Is this the typical time it takes to review Title XVI feasibility studies?

Answer. The Bay Area Regional Water Recycling Program (BARWRP) study was submitted to Reclamation in 1999 by the local water agencies. The Southern California Comprehensive Water Reclamation and Reuse Study (SCCWRRS) was completed by Reclamation, in cooperation with local water agencies, in 2001. The reports documenting these studies were submitted to Congress, which completed Reclamation's responsibility under Sections 1610 and 1606 (respectively) of Title XVI, Public Law 102–575. These studies were regional and programmatic in nature and were not intended to determine the feasibility of individual projects; therefore, Reclamation has not been reviewing these studies or specific projects identified in either of these reports to determine their feasibility during the past 7 and 5 years, respectively.

However, Public Law 108–361 required Reclamation to determine whether subsequent reports and other documentation submitted by individual project proponents met the requirements of the 1998 Title XVI Guidelines for determining project feasibility, and this review has now been completed and provided to Congress.

Question. Is it true the Bureau has not yet completed its review process?

Answer. Reclamation has completed its review of the reports and other documentation submitted by project proponents in response to our request for information for the report directed by Public Law 108–361. The report was transmitted April 28, 2006.

Question. When can both Congress and the projects sponsors expect to receive the Bureau's completed review?

Answer. The report was transmitted April 28, 2006.

SUBCOMMITTEE RECESS

Senator DOMENICI. Anyway, with that sad tale, we are in recess.

[Whereupon, at 11:10 a.m., Tuesday, March 28, the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER, AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 2007

THURSDAY, MARCH 30, 2006

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 10:13 a.m., in room SD–138, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman) presiding.

Present: Senators Domenici, Bond, Allard, Reid, and Murray.

DEPARTMENT OF ENERGY

STATEMENT OF DAVID K. GARMAN, UNDER SECRETARY OF ENERGY FOR ENERGY, SCIENCE AND ENVIRONMENT

ACCOMPANIED BY:

JAMES RISPOLI, ASSISTANT SECRETARY OF ENERGY FOR ENVIRONMENTAL MANAGEMENT

JEFFREY JARRETT, ASSISTANT SECRETARY FOR FOSSIL ENERGY

OPENING STATEMENT OF SENATOR PETE V. DOMENICI

Senator DOMENICI. The hearing will please come to order. Now, this is a very lengthy hearing. We are going to try to do it all. I do not know if we can finish it in the time allotted. If we do not, we will hold it over to this afternoon and try to finish it for whomever can come. The witnesses that are not finished this morning, please understand, get on your telephones and advise people you might have to be here this afternoon.

I have a very lengthy statement. There is no other way for me to do it. But I am going to yield to the distinguished ranking minority leader for his opening remarks. Then I will have mine and then if either Senator would like. I would like them to keep them brief and to the point.

Senator Reid, thank you for coming.

STATEMENT OF SENATOR HARRY REID

Senator REID. Mr. Chairman, thank you very much. I appreciate your courtesy. I know everyone is busy and I feel that I should not step out of line, but I appreciate your allowing me to do so.

Secretary Garman, Dr. Orbach, I am delighted to see the proposed increases for the Office of Science Research Programs. As a supporter of balanced energy policy, I believe that your office has an absolutely critical role to play in delivering discoveries and sci-

entific tools that transform our understanding of energy and matter in areas as diverse and fundamental as biological and environmental research to nuclear power and even fusion.

I am also pleased to see the proposed increases for energy sciences, computing, nuclear physics, fusion energy, including the $41 million increase for the International Thermonuclear Experimental Reactor project, known as ITER.

Dr. Garman, I am similarly pleased to see the increases for the proposed Advanced Energy Initiative. I laud the value of research and development to promote American energy security and a corresponding decrease in our dependence on foreign resources. I also believe that the proposed initiatives in biofuels, hydrogen, and solar research can all play a significant role in our future energy security.

I am, though, disappointed by your decision to zero out the geothermal energy program. I am really somewhat mystified. I see nothing in the budget request to defend this action of yours, so I assume you are hard-pressed to come up with an answer. Geothermal is really something that needs to be used. It is there, it is at our fingertips, and some have referred to Nevada as the Saudi Arabia of geothermal energy.

I have a series of questions and a separate statement for the record on this issue and I ask consent that I can submit these to you.

Senator DOMENICI. Without objection.

Senator REID. Though you should be assured I will continue to press for geothermal energy in next year's budget, this year's budget, fiscal year 2007.

I hope you will also take some time to discuss why you did not avail yourself of the fiscal flexibility offered in last year's conference report concerning Congressionally directed activities. I am very eager to understand what led you to the conclusion that laying off National Renewable Energy Lab employees, if only for a week, made sense, given the broad authority you had to avoid such an outcome. It embarrassed the President and it embarrassed all of us.

This subcommittee needs to be in a position to support the President's competitiveness and energy initiatives. However, unless this committee receives a higher budget allocation some very difficult choices will have to be made between proposed increases in nuclear and renewable energy programs, while programs such as fossil energy are severely shortchanged. For every huge plus-up of new ideas by the President, you have cut huge congressional priorities. Congress is going to have to restore your indefensible, I believe indefensible, cuts to the weatherization program, clean coal power initiative, and geothermal energy programs, just to name a couple.

The most likely sources of these funds in a flat budget environment are big initiatives that are seeing huge funding pushes and it is hard for us to comprehend that. For example, Yucca Mountain. The Department has requested $544 million. This represents an increase over the $495 million of last year of $50 million. I am convinced that the proposed Yucca Mountain nuclear waste dump will never be built. We know it is mired in scientific, safety, and tech-

nical problems. When this bill was passed 20 years ago, there was reason for doing it. It has not worked well.

In 1987 Congress, as we know, took additional action. It was based on political expediency and it has not worked well. DOE has been studying this site for 20 years. The studies are incomplete and do not provide a basis for evaluating whether Yucca Mountain is a safe site for storing nuclear waste or that we can transport it across America's highways and railways to our communities, past our schools and hospitals and through major metropolitan areas. Transportation of nuclear wastes around the country and to Yucca poses hazards to public health, economic and national security, and environmental safety from accidents and terrorist acts, issues that did not exist in 1982, issues though which, with the changing environment, DOE has refused to address.

Moving about 80,000 tons of waste to Yucca would involve at least 55,000 truckloads, maybe as many as 10,000 rail shipments, through counties which include 250 million people—Sacramento, Buffalo, Denver, Chicago, the District of Columbia.

Before his election, President Bush wrote, I quote: "I believe sound science and politics must prevail in the designation of any high-level nuclear waste repository. As President, I would not sign legislation that would send nuclear waste to any proposed site unless it has been deemed scientifically safe." Again, President Bush let politics and unsound science prevail.

A few of the scientific problems that we have seen even in the last year-and-a-half include: a court decision throwing out EPA's radiation protection standards as they were not strong enough to protect the public from radiation exposure and failed to follow the recommendations of the National Academy of Sciences. Next, EPA published in 2005 its revised standards for the proposed site, which most scientists believe are inadequate, do not meet the law's requirements, and do not protect public health and safety. In fact, EPA is proposing the least protective health radiation standard in the whole world.

Numerous scientific and quality assurance problems with transportation have also been brought to our attention, problems dealing with transportation, corrosion of casks, effectiveness of materials, causing DOE to suspend work on the surface facilities and to issue a stop-work order on the containers.

Also, DOE revealed that documents and models about water infiltration at Yucca Mountain had been falsified. People lied about it. They whitewashed the problem, but they cannot whitewash the DOE Inspector General's report that DOE continues to ignore falsification of technical and scientific data on the project. This is not the governor of Nevada or some State legislature, but it is the Inspector General of the Department of Energy that says this, that the DOE continues to ignore falsification of technical and scientific data.

In numerous media reports, the administration has confirmed that it is preparing a legislative package that will remove health, safety and legal requirements, a clear admission, I suggest, that the project is a public health and safety and scientific failure.

It should be clear to anyone that the proposed Yucca Mountain project is not going to move. It will never open. Yet we must safely

store spent nuclear fuel. It is time to look at other alternatives. Fortunately, the technology to realize a viable, safe, and secure alternative is readily available and can be fully implemented within a decade. That technology is on-site dry cask storage. As we speak, dry casks are being safely used at 34 sites throughout our country. Even NEI projects 83 of the 100 active reactors will have dry cask storage by 2050.

Senator Ensign and I have a bill that would safely store nuclear waste while we look for a scientifically based solution, the Spent Fuel On-Site Storage and Security Act. Our bill requires commercial nuclear utilities to secure waste in licensed on-site dry cask storage facilities. There is no justification for endangering the public—I pushed it down with my card. Thanks, Mr. Chairman.

There is no justification for endangering the public by rushing headlong toward a repository that is fraught with scientific, technical, and geological problems when it can be stored safely and securely in dry casks. The bill guarantees all Americans that our Nation's nuclear waste will be stored in the safest way possible. So it is time we proceed to address the problem, the safe storage of spent nuclear fuel, and stop pouring hundreds of millions of dollars every year down the drain.

PREPARED STATEMENTS OF SENATOR HARRY REID

Since the Yucca project I believe is a failure, I will continue to oppose it. I want to, Mr. Chairman, spread on the record how, even though we have butted heads on this issue for many, many years, it has all been in the sense of policy differences. You have been a gentleman to work with and I appreciate that, extending today to allowing me to go first, and I apologize to my colleagues for taking as long as I have with the statement.

[The statements follow:]

PREPARED STATEMENT OF SENATOR HARRY REID

Mr. Chairman, I appreciate you holding this combined hearing today to discuss the fiscal year 2007 budget request for a large number of Department of Energy programs, including the Office of Science, the Energy Efficiency and Renewable Energy programs, the Office of Electricity, the Fossil Energy program, the nuclear energy program, the Office of Legacy Management, the Office of Environment, Safety and Health, the Environmental Management program and, of course, the Yucca Mountain program.

I am pleased to welcome Mr. Dave Garman, the Under Secretary for Energy, Science, and the Environment, and Dr. Raymond Orbach, the Director of the Office of Science.

I am going to submit several longer statements for the record regarding the Energy Supply Program and Office of Science generally, and the geothermal energy program specifically.

However, while I am here today, I would like to offer several brief observations about the overall budget request for these programs and then a much longer discussion about the on-going government failure and embarrassment that is the Yucca Mountain Program.

Mr. Chairman, I will try to be brief.

Dr. Orbach, I am delighted to see the proposed increases for the Office of Science research programs. As a supporter of a balanced energy policy, I believe that your office has an absolutely critical role to play in delivering discoveries and scientific tools that transform our understanding of energy and matter in areas as diverse and fundamental as biological and environmental research to nuclear power and fusion.

I am pleased to see the proposed increases for basic energy sciences, computing, nuclear physics, and fusion energy including the $41 million increase for the International Thermonuclear Experimental Reactor project (ITER).

I was prepared to ask you some very specific questions about job impacts based on enactment of this budget request to make sure we avoid any problems similar to what we faced this year, but given the massive increases I think I can forgo that line of questioning.

Mr. Garman, I am similarly pleased to see the increases for the proposed Advanced Energy Initiative. As you are aware, I laud the value of research and development to promote American energy security and a corresponding decrease in our dependence on foreign resources. Further I believe that the proposed initiatives in Biofuels, Hydrogen, and Solar research can all play a significant role in our future energy security.

I am, however, mystified by your decision to zero our the geothermal energy program. I see little effort in the budget request to even bother to try to defend this action, so I assume you were hard-pressed to dream one up. I have a very long series of questions and a separate statement for the record on this issue. However, it is safe to say that there will be a geothermal energy program in fiscal year 2007.

I hope you will also take some time to discuss why you did not avail yourself of the fiscal flexibility offered you in the fiscal year 2006 Conference Report concerning Congressionally-directed activities. I am very eager to understand what led you to the conclusion that laying off National Renewable Energy Lab employees, if only for a week, made sense given the broad authority you had to avoid such an outcome.

Finally, this subcommittee wants to be in a position to support the President's Competitiveness and Energy Initiatives. However unless this committee receives a higher budget allocation, some very difficult choices will have to be made between proposed increases in Nuclear and Renewable Energy programs while program such as Fossil Energy are severely shortchanged.

For every huge plus-up of shiny new ideas by the President, you have cut huge Congressional priorities. Congress is going to have to restore your indefensible cuts to the Weatherization Program, the Clean Coal Power Initiative, and the geothermal energy program, just to name a few. The most likely sources of these funds, in a flat budget environment, are big initiatives that are seeing huge funding pushes.

As for Yucca Mountain . . . .

The Department has requested $544 million for fiscal year 2007 for the nuclear waste repository program. This represents an increase over the current year appropriated amount of $495 million by approximately $50 million.

I am convinced that the proposed Yucca Mountain nuclear waste dump will never be built because the project is mired in scientific, safety and technical problems.

In 1982, Congress passed the Nuclear Waste Policy Act, which called for disposal of nuclear waste in a deep geological repository that would remain stable for thousands of years and directed DOE to pick the most suitable site based on the natural, geologic features of the site.

In 1987, Congress took action based on political expediency and limited DOE's studies to Yucca Mountain, despite the fact that the criteria in the Act would disqualify the Yucca Mountain site.

DOE has been studying the site for 20 years. The studies are incomplete and do not provide a basis for evaluating whether Yucca Mountain is a safe site for storing nuclear waste or that it can be transported safely across America's highways and railways and through our communities, past our schools and hospitals and through major metropolitan areas.

Transportation of nuclear waste around the country and to Yucca poses hazards to public health, economic and national security and environmental safety from accidents and terrorist attacks, issues which DOE has not addressed.

Moving 77,000 tons of waste to Yucca would involve about 53,000 truck shipments or 10,000 rail shipments over 24 years, through counties in which nearly 250 million people live, including Sacramento, Buffalo, Denver, Chicago, Washington DC, and Las Vegas.

Before his election, President Bush wrote, "I believe sound science, not politics, must prevail in the designation of any high-level nuclear waste repository. As President, I would not sign legislation what would send nuclear waste to any proposed site unless it's been deemed scientifically safe."

Now President Bush is letting politics and unsound science prevail at Yucca Mountain.

A few of the scientific problems that we have seen the last year and a half include:

—In 2004, the Court threw out EPA's first radiation protection standards for Yucca because they were not strong enough to protect the public from radiation exposure and failed to follow the recommendations of the National Academy of Sciences.

—In 2005, EPA published its revised standards for the proposed Yucca Mountain high-level waste dump, which are wholly inadequate, do not meet the law's requirements and do not protect public health and safety. In fact, EPA is proposing the least protective public health radiation standard in the world.

—Numerous scientific and quality assurance problems with transportation plans, corrosion of casks, the effectiveness of materials, etc., causing DOE suspend work on the surface facilities and NRC to issue a stop work order on the containers.

—In addition, DOE revealed that documents and models about water infiltration at Yucca Mountain had been falsified. They whitewashed this problem, but cannot whitewash the DOE Inspector General's report that DOE continues to ignore falsification of technical and scientific data on the project.

In numerous media reports, the administration has confirmed that it is preparing a legislative package that will remove health, safety and legal requirements, a clear admission that the project is a public health, safety and scientific failure.

It should be clear to anyone that the proposed Yucca Mountain project is not going anywhere. Yucca Mountain will never open.

Yet, we must safely store spent nuclear fuel.

It is time to look at other nuclear waste alternatives. Fortunately, the technology to realize a viable, safe and secure alternative is readily available and can be fully implemented within a decade if we act now. That technology is on-site dry cask storage.

Dry casks are being safely used at 34 sites throughout the country. NEI projects 83 of the 103 active reactors will have dry storage by 2050.

Senator Ensign and I have a bill that would safely store nuclear waste while we look for a scientifically-based, safe solution—The Spent Fuel On-Site Storage and Security Act of 2006, S. 2099. Our bill requires commercial nuclear utilities to secure waste in licensed, on-site dry cask storage facilities.

There is absolutely no justification for endangering the public by rushing headlong towards a repository that is fraught with scientific, technical and geological problems when it can be stored safely and securely in dry casks. Our bill guarantees all Americans that our Nation's nuclear waste will be stored in the safest way possible.

It is time we addressed to problem at hand—the safe storage of spent nuclear fuel—and stopped pouring taxpayers' money down the drain on a project that could endanger all of our citizens.

The Yucca Mountain project is a failure. I vow to continue to fight this project.

Thank you, Mr. Chairman. As always, I look forward to working on these issues with you and your staff.

SUPPLEMENTAL STATEMENT OF SENATOR HARRY REID

REGARDING THE TERMINATION OF THE GEOTHERMAL ENERGY PROGRAM

We need to put America on the path to energy independence with policies that promote advanced energy technologies. Energy is critically important to America's future and our national security. That's why I joined as a leader in the Democrats' plan to make America energy independent by 2020.

Our plan builds on a fundamental commitment to support expanded renewable energy development. The development of renewable energy will bolster our national security, protect our environment, and create jobs in Nevada, while also providing a steady, reliable supply of energy for consumers.

Nevada has many features that make it an ideal location to develop renewable energy sources. In fact, our State has been a leader in this area for many years. Nevada is particularly rich in geothermal energy, which could meet one-third of our State's energy needs. I worked with then-Energy Secretary Bill Richardson to launch the Geopowering the West initiative in 2000 to help develop Nevada's tremendous geothermal potential. This project funds public/private partnerships to develop geothermal power in Nevada, California, New Mexico, and Utah, with the ultimate goal of providing 10 percent of the electricity needs of the Western States from geothermal sources by the year 2020.

One of the great advantages of renewable energy is that these technologies work in harmony with the environment and do not leave a legacy of dangerous waste

products that future generations will have to figure out how to deal with. One of the best legacies we can leave to our children is a clean environment and a history of preservation of our natural beauty and wilderness. We always will need clean water to drink and safe air to breathe. While we have made much progress over the last 30 years, it is critical that we maintain our strong commitment to safeguarding our Nation's natural heritage and protecting our environment.

Our Nation's leadership must put us on a path that protects the environment and builds a new, sustainable economy. Both the environment and the economy are crucial to our Nation. Without a strong economy, it is impossible to protect our environment adequately. Without a healthy environment, our economy cannot thrive. The best technologies to address both our energy and economic needs are energy efficiency and renewable energy, and I believe that most of my colleagues in the Senate would agree with that assertion.

For a moment, I thought I might hear the administration agreeing with us. The proposed fiscal year 2007 Budget of the Department of Energy began with fanfare that gave that impression. In its press release on February 6, DOE said: " . . . the Department of Energy (DOE) requests $23.6 billion, a $124 million increase over the fiscal year 2006 request. The fiscal year 2007 budget request makes bold investments to improve America's energy security while protecting our environment, puts policies in place that foster continued economic growth, spurs scientific innovation and discovery, and addresses the threat of nuclear proliferation."

But getting past the fanfare, the reality of the proposed fiscal year 2007 budget is far different. The administration's budget goes in the opposite direction, cutting efforts to develop clean, renewable energy and promoting technological choices that will make our nuclear proliferation a greater threat and expanding our nuclear waste legacy to future generations.

PROVIDING RELIABLE, CLEAN ELECTRIC POWER

One of the challenges we face is meeting the growing demand for electric power, particularly in the West. The Western Governors Association has estimated that over 50,000 MW of new electric power generation will be needed to meet growing demand in the next decade. How we meet these needs will have profound consequences for Nevada, the West and the Nation.

DOE's proposed budget seems to make some clear and rather abrupt choices regarding future power production options. The DOE Budget documents asserts: "Few technologies provide clean, reliable, baseload electricity—only nuclear power" (DOE fiscal year 2007 Budget presentation Power Point, page 6).

It is true that few technologies can provide electricity that is clean, reliable, and baseload—many technologies suffer from problems with intermittent generation and offer only peaking support. But, the Department's budget inexplicably increases funding for these intermittent technologies while completely gutting the most promising renewable technology that can provide reliable baseload power—geothermal energy.

The Department's own Geothermal Program Strategic Plan stresses these values of geothermal energy. It states:

"The Earth houses a vast energy supply in the form of geothermal resources. These resources are equivalent to 30,000 years of energy for the United States at current rates of consumption. However, only about 2,600 MWe of geothermal power is installed today. Geothermal has not reached its full potential as a clean, secure energy alternative because of concerns or issues with resources, technology, commitment by industry, and public policies. These concerns affect the economic competitiveness of geothermal energy.

"The U.S. Department of Energy's Geothermal Technologies Program seeks to make geothermal energy the Nation's environmentally preferred baseload energy alternative. The Program's mission is to work in partnership with U.S. industry to establish geothermal energy as an economically competitive contributor to the Nation's energy supply."

But, the geothermal strategic plan indicated that the program could not reach its goals until at least 2040 because of its limited funding. It went on to say that "Doubling the Program's budget" would accelerate achieving the program goals and they could "be attained by 2020, resulting in an overall budget savings of $100 million."

Sounds like doubling the geothermal research program would be a good investment!

If the Department's researchers felt they could bring tens of thousands of megawatts of reliable, baseload geothermal power on-line by 2020 with a doubling of the budget, you would think that recommendation would receive top priority. But

it obviously didn't. Instead, the Department of Energy budget has proposed to zero-out the geothermal program. It has chosen to undermine progress in a technology that can effectively compete with nuclear power or fossil fuels to provide reliable electric power.

Why? What rationale could possible support such a decision? Well, Secretary Bodman explained to the Senate Energy Committee: "While the budget proposes increases for Biomass, Solar and Hydrogen research, the Geothermal Program will be closed out in fiscal year 2007 using prior year funds. The 2005 Energy Policy Act amended the Geothermal Steam Act of 1970 in ways that should spur development of geothermal resources without the need for subsidized Federal research to further reduce costs."

So is DOE blaming Congress! We simply went too far in the Energy Policy Act supporting geothermal energy, and now it doesn't need DOE support?

But, let's compare these choices for a moment. DOE proposes $0 for geothermal energy, but it has asked for $632.7 million for nuclear energy activities. I guess EPAct didn't take care of nuclear power as well. But, that doesn't seem to be the case. Here for the record is how the Senate Energy Committee views the highlights of EPAct's provisions supporting nuclear energy and geothermal energy:

"Highlights of the Energy Bill—Senate Energy Committee

"Nuclear Power

"Nuclear energy is the world's largest source of emission-free energy. Nuclear powerplants produce no controlled air pollutants, such as sulfur and particulates, or greenhouse gases. The use of nuclear energy in place of other energy sources helps to keep the air clean, preserve the Earth's climate, avoid ground-level ozone formation and prevent acid rain.

"The bill has several provisions to ensure that nuclear energy remains a major component of the Nation's energy supply. Nuclear power currently provides 20 percent of America's electricity. It is our cheapest form of electricity, second only to hydropower. It one of our safest, most reliable and cleanest energies.

"The energy bill offers a 1.8 cent per kilowatt hour production tax credit for electricity produced by new nuclear power. This applies only to the first half dozen advanced nuclear powerplants.

"It offers federal loan guarantees for innovative technologies—including new advanced nuclear reactors—that will diversify and increase energy supply while protecting the environment. These guarantees are available only for new technologies that provide clean energy and protect the environment. Those seeking guarantees pay into the U.S. Treasury a sum equal to the financial risk assessed by the CBO, thus not costing taxpayers a dime.

"Establishes standby support framework through the DOE for new nuclear plant construction against regulatory or judicial delays for six reactors. This standby support would cover the delay before plant is put into operation.

"Extends Price Anderson liability protection is extended through 2025 for both NRC licensees and DOE contractors.

"Creates a stand-by support program to ensure that consumers do not have to pay higher electricity bills because of unforeseen delays in the construction of new nuclear powerplants due to bureaucratic red tape or litigation. The program insures the utilities for the cost of these delays.

"Provides for the export of high enriched uranium to Canada, Belgium, France, Germany or the Netherlands for the sole purpose of producing diagnostic and life saving medical isotopes until a low enriched uranium alternative is commercially viable and available.

"Requires the DOE to propose a permanent disposal facility to Congress for Greater Than Class C waste within one-year of enactment.

"Strengthens security of nuclear facilities, including improved federal oversight of plant security and the expansion of federal statutes for sabotage of nuclear facilities."

"Geothermal

"Geothermal energy is an abundant energy in various parts of the country that is under-utilized. Geothermal energy is clean, renewable and, in countries like Iceland, is a primary source of energy.

"The energy bill creates a competitive geothermal leasing program that allows the private sector—not just government geologists—to identify geothermal areas for leasing. The program is intended to bring geothermal energy to the market sooner.

"The bill also includes incentives to counties to encourage geothermal development by allowing them to keep a percentage of the royalties from that development."

Well, at least according to the Senate Energy Committee EPAct seems to have done a lot more for nuclear power than geothermal energy. Given the Secretary's statement justifying terminating the geothermal research program, perhaps he should take another look at whether the Department needs to continue its nuclear power programs. Or, for that matter, perhaps other programs as well.

Questions: Department officials have also claimed that the fiscal year 2007 budget does not reflect the directions it was given in EPAct because their budget was formulated before the new law was passed. Yet, apparently the Department can move fast enough to terminate the geothermal research program based on EPAct. Can the Department explain how EPAct figured into its fiscal year 2007 budget deliberations and provide any studies or other documents that assesses in a comparative fashion the provisions of EPAct and the Department's research programs? When does the Department intend to implement the new initiatives in EPAct—including new initiatives that direct increased funding for renewable energy research, including geothermal energy?

CONTRADICTIONS TO OTHER STUDIES AND ASSESSMENTS

The decision to close out the geothermal research program also appears to contradict the recommendations of the last external review of the Department of Energy's renewable programs, the 2000 report of the National Research Council entitled Renewable Power Pathways. That National Research Council's examination of the geothermal program states in clear terms the importance of the program, and the recommendation that it continue to be funded: "In light of the significant advantages of geothermal energy as a resource for power generation, it may be undervalued in DOE's renewable energy portfolio."

But, the Department of Energy seems not to agree with this assessment. In other budget documents the Department presents another rationale for closing out this program. Basically, it sees geothermal energy as a "regional resource" with limited applicability. (see "http://www1.eere.energy.gov/ba/pdfs/fiscal year 2007_budget_brief.pdf.)

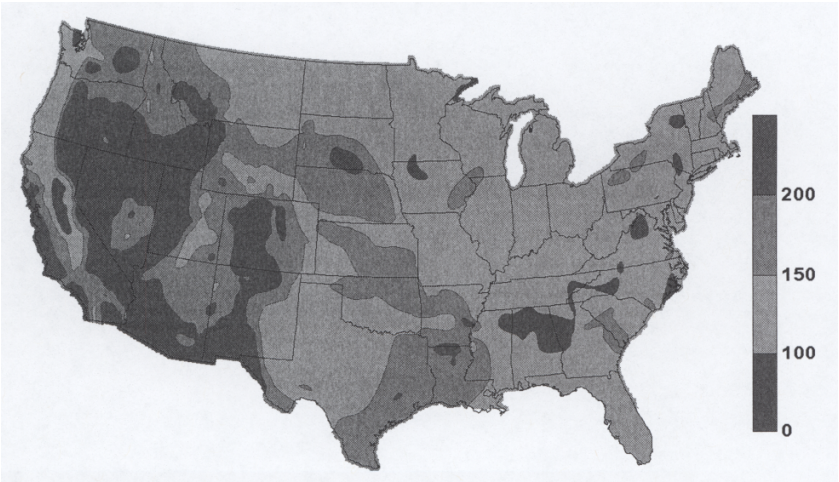
Somehow this represents a change in views at the Department of Energy. The Department's 2003 Strategic plan included geothermal energy research as part of its efforts to "Improve energy security by developing technologies that foster a diverse supply of reliable, affordable, and environmentally sound energy . . .". Geothermal power was part of DOE's "long-term vision of a zero-emission future in which the nation does not rely on imported energy."

Obviously, something has changed. Somehow, the geothermal resource has shrunk in the past 3 years! Quite an amazing phenomenon, which probably deserves some explanation. Today, geothermal resources are used in 25 States for power and direct use purposes (not including heat pumps) and advanced technology has the potential to bring geothermal power in use across the country.

The Department used to consider the future potential of geothermal energy to be quite significant. Today, we produce about 2,800 Megawatts of power from geothermal resources, and the power potential alone was estimated to be many times that amount. The DOE Geothermal Strategic Plan used to say:

"The U.S. Geological Survey estimated that already-identified hydrothermal reservoirs hotter than 150°C have a potential generating capacity of about 22,000 MWe and could produce electricity for 30 years.[1] Additional undiscovered hydrothermal systems were estimated to have a capacity of 72,000–127,000 MWe. At depths accessible with current drilling technology virtually the entire country possesses usable geothermal resources (Figure 1). The best areas are in the western United States where bodies of magma rise closest to the surface."

The Department's strategic plan included a very interesting map that showed the potential of heat in the earth to contribute to our energy needs. As the map shows, DOE used to view the technical potential of geothermal energy to span the entire country from Maine to California.



Questions: Does the Department agree with the National Research Council that the US geothermal resource base holds significant potential to contribute to national energy needs? What actions did the Department take to implement the recommendations made by the National Research Council in 2000? Has the Department had further communications with the NRC about its assessment and any follow-up by the Department? Please provide any documents supporting these actions and communications?

—How does DOE view the potential of geothermal resources? What has happened in the past three years to apparently change the Department's views of the geothermal resource base and its potential?

—What resources does the Department now consider economic: hydrothermal, hot dry rock, geopressured, magmatic, others?

—The Department had indicated that there were many technological challenges to achieving production from the vast geothermal resource base. Does the Department now consider these challenges are solved or does the Department have new information that indicates its prior assessments of geothermal resources are incorrect?

OMB RATIONALE

The Office of Management and Budget, with whom I presume the Department coordinates its budget, seems to offer some additional rationales for terminating the geothermal research program. They are just about as interesting as those presented by the Department itself. There appear to be three main assertions by OMB:

—(1) geothermal technology is "mature" and doesn't really need more R&D,

—(2) the change in leasing royalty structure from 50/50 to 50/25/25 will make a substantial difference, so research isn't needed,

—(3) the forthcoming resource assessment by USGS will solve the industry's exploration problems.

—(4) with new tax incentives, geothermal power does not need research support.

With only a very small fraction of the "hydrothermal" resource base not in use, it seems self-evident to me that most of the vast geothermal resource base is not economically useable with today's technology.

Questions: How did the Department determine that geothermal technology was mature and did they apply this same test to all other technologies in the Department's portfolio?

—Would the Department provide to the Committee any studies it has done of technological maturity and a chart showing the comparable maturity of all of the technologies it proposes to fund and not to fund?

—How did the Department decide that nuclear energy, which provides 20 percent of the electricity in the United States, was somehow not mature while at the same time deciding that geothermal energy, which provides 0.5 percent of the electricity in the United States, was mature?

ROYALTY CHANGES

Regarding the changes in EPAct to Federal royalties, let me say that I support those changes since they will provide needed support for counties in the West to provide the infrastructure needed for energy development that benefits the entire Nation, and these funds will help mitigate for the socioeconomic impacts of new development on the local community.

But, it is far from obvious to me how splitting the Federal share of the royalties with the local government is going to make a lot of difference to the climate for geothermal development. It is even less clear how doing so is going to help us with our needs for new exploration/characterization/resource-management technology. This is really an "apples and oranges" argument. If I have a broken furnace, it's nice if you buy me a new sofa—but it won't keep my house warm.

Also, the budget also proposes to repeal this provision of EPAct anyway! Perhaps the Department could clarify this situation. I'm almost afraid to ask.

USGS RESOURCE ASSESSMENT

The next rationale—that the USGS national resource assessment will solve the industry's exploration needs—seems to beg questions about what it is that the USGS really plans to do and how much funding they will have to do anything. Does the Department of Energy presume that the USGS national resource assessment will discover new resources or develop new exploration technology?

It's been my understanding that USGS will not engage in any significant new exploration activity. What they will do is "assessment" by examining existing field data (much of which was available clear back in the 1970's when Circular 790 was written) and re-interpret it in light of more modern concepts about how geothermal systems are likely to behave, and in light of field data that has been acquired by industry since that time. The purpose is to come up with a more realistic appraisal of how much identified geothermal potential there really is, and where it is located.

However, I understand that this will be a study involving little or no new field work, no exploration drilling, and no exploration technology development or verification. The essential fact is that the USGS assessment, while important and potentially useful for planning purposes (i.e., the WGA study and policy pronouncements by organizations like EIA), is not likely to discover any genuinely NEW resources.

Questions: Does the Department of Energy presume that the USGS national resource assessment will discover new resources or develop new exploration technology?

—Please explain and detail any new exploration or technology development anticipated to be undertaken by the USGS in the conduct of its new national resource assessment? Please discuss the support, to date, from DOE for these efforts and the plans, if any, for continued support by DOE for this effort?

—My understanding from the industry is that a critical need is better exploration technology, and that this is an area where technological breakthroughs could be made. What information does the Department have to support its assertion that private industry will develop this technology in the next few years without government research support?

TAX INCENTIVES

Another interesting conclusion that OMB has come to is that with the new tax incentive offered geothermal power, there is no need for more research funding. The new tax incentive is the addition of geothermal technology to the list of those eligible for the Production Tax Credit. Notably, wind and biomass have been eligible for the production tax credit since 1992, but neither of those programs is proposed for termination. Also, the current production tax provision expires in 2 years.

I have several questions about this rationale.

Questions: Does the Administration now support having new geothermal facilities eligible for the full production tax credit? When did the Administration make this policy change, and where was it communicated?

—Does the Administration now support making the production tax credit permanent? Why wasn't this reflected in the Administration's fiscal year 2007 budget?

—What information, analysis, or other information does the Department have that supports its assertion that this tax credit substitutes for the need for federal research support? How has the Department applied this measure across the technologies within its research portfolio, and would the Department provide a chart comparing the tax treatment provided by law for the technologies in its research portfolio?

INTERNATIONAL COMPETITIVENESS

Finally, I would ask about the impact of the proposed research cuts on the international competitiveness of the geothermal industry. It's my impression that the U.S. industry has been a world leader in geothermal technology, helping develop billions of dollars of projects around the world.

In fact, in addition to calling for an expanded geothermal research program, the National Research Council's Renewable Power Pathways report stresses how the United States is the world leader in geothermal technology and that the direction DOE takes with its research program has real consequences for this situation. Their NRC report states: "the United States has taken the lead in successful commercial demonstrations of geothermal energy for generating electricity and heat at several sites and is the current technology leader in the world among very active competitors in Europe and Japan." They go on to warn "U.S. leadership may be short-lived because the U.S. R&D program is now much smaller than those of overseas competitors."

Questions: Is it a fair assumption that with total elimination of the DOE research program, U.S. leadership in geothermal technology will be lost in a fairly short period of time?

—Isn't this contradictory to the emphasis that the Administration is placing upon science and technology as underpinnings for our economy and our future?

CONCLUSION

Geothermal energy is an important resource for the Nation. We have only begun to tap this vast resource. We should not be cutting back on geothermal or other renewable resources efforts. We instead should be expanding our effort to use this resource in all of its forms more effectively. That means making the Federal production tax credit permanent for geothermal and other renewable technologies, expanding our resource assessment efforts by USGS and supporting State agencies and university research centers, and increasing funding for geothermal research and outreach by the Federal Government.

Senator DOMENICI. Thank you very much, Senator.

We will proceed now. Let me ask, does any other Senator want to make a brief statement before I make mine on your side? A brief one or a long one?

Senator MURRAY. A brief one.

Senator BOND. I have a long one.

Senator DOMENICI. You will wait for your turn?

Senator BOND. I will wait for my turn.

Senator DOMENICI. Okay. I do not even remember what your issue is here today. You have got a couple of them.

Senator BOND. Coal.

Senator DOMENICI. Coal.

Senator BOND. Coal.

Senator DOMENICI. The lack of funding for coal in the budget, is that it?

Senator BOND. You guessed it. Boy, you just blew my whole story.

STATEMENT OF SENATOR PETE V. DOMENICI

Senator DOMENICI. All right. Let me start once again and back up for a minute, thanking the Senator for his comments. It is true we do try to work together on this issue. I do not purport here today for the press—I am not going to answer the points that have been raised by the distinguished Senator. Obviously we have some very serious disagreements. We have some ideas that seem to be merging in terms of where things are going.

Having said that, I want to thank Dr. Ray Orbach and Secretary Garman for being here today. Dr. Orbach is the current Director of the Office of Science and the President's nominee for the newly

created position of Under Secretary of Science. Dr. Orbach, it is just a matter of things clearing here and then you will receive your new title. So I hope you are acting like you are an Under Secretary.

Dr. ORBACH. No.

Senator DOMENICI. You are not? Well, we will let the world know that as far as this committee is concerned you are, and the Senate is going to do that pretty soon.

Secretary Garman, we are delighted that you have had time now to really get your feet wet in this office. It is a tough one. You have got a big, big agenda, everything from energy efficiency, renewables, the Office of Nuclear Energy, Office of Electricity Delivery and Reliability, Office of Fossil and R&D and Environment Management Activities.

It is nice to see you again, and we welcome you to the committee. We hope you are enjoying the work, but we hope you understand that you have a terribly difficult job put on your shoulders, and you are going to have to tell us today that you are pushing hard for some of the very tough things that have to be done.

In the State of the Union the President announced an American Competitive Initiative and Advanced Energy Initiative. These initiatives recognized that the Department's long-term investment in physical sciences and energy R&D were of utmost importance. I am also pleased to see an increasing level of cooperation between the Office of Science and Energy Research and Development in their efforts to solve our energy needs. I believe the bioenergy and hydroenergy initiatives are a good example of this cooperative investment. I hope it continues. I think its synergism will yield big results.

The American Competitive Initiative commits $5.9 billion in 2007 and more than $137 billion over 10 years to programs that help America retain its leading edge in science, math, and technology. The ACI, as it is called by the President, will increase investments in research and development, education, tax incentives to encourage innovation within this Department of Energy that you now try to manage under the able direction of the Secretary.

This translates to $505 million increase from 2006 levels to a $4.1 billion 2007 level for the Office of Science. I assume, Dr. Orbach, that you relish and look forward to such an increase. Is that correct?

Dr. ORBACH. Yes, sir.

Senator DOMENICI. I saw you smile, so I thought you might just as well talk.

The President also announced an Advanced Energy Initiative, which aims to reduce America's dependence on imported energy sources and commits $2.1 billion to meet the goal, an increase of $381 million.

The President recognizes that research and innovation are America's best answer to the voracious global appetite of carbon fuels, which my friend Senator Bond is here to talk about, obviously. Thanks to the work of the Department, our Nation will be able to produce more energy from nuclear power, wind, sun, and our own field crops in the coming years. These are not little actions, but rather, combined, could be gigantic steps toward America's minimizing its dependence upon foreign carbons, foreign sources of

crude oil, to run our machine, our transportation and economic machine.

I commend the President for his efforts to make tough choices with the funds available. However, I am concerned about several programs and they are big; they are important and they are vital to our energy independence and they did not receive sufficient funding. Specifically, I am concerned about the shortfall in funding for the nuclear R&D funding, the clean coal power initiative, and the several provisions within the EPAct that will support development of new alternative energy technology demonstrations. Clearly, we put them in in the Energy Act. The President has not funded them to the extent that many of us thought he should.

The Office of Nuclear Energy—there are shortfalls in the Nuclear Power 2010, Next Generation nuclear programs, that will inhibit our ability to fully realize a revival in this nuclear power agenda. NP 2010 program is critical to demonstrating its first of a kind combined construction-operating license process with the Nuclear Regulatory Commission. This cost is shared, is a shared activity, which the Department is not living up to, will not be able to, as to its share of the deal. The nuclear powerplant Next Generation received $23 million, down $16 million. That is a rather sharp cut.

This budget process proposes to cut clean coal power initiative from $49.5 million this year to $5 million for 2007, almost you could say doing away with it. Ninety-five percent equals 100 percent, I imagine, in a program like this.

The United States has a 250-year supply of coal. Protecting the technology to burn coal at a minimal impact is critical to the economic and global competitiveness of this great Nation. I question the wisdom of this and hope you can explain it. There may be a short-term explanation or there may be a catch-up explanation. We need that.

Another area of concern under the Energy Policy Act is that this legislation provides incentives. I direct this at you again, Mr. Under Secretary. These incentives are in the form of loan guarantees. You are aware of that. You helped us write it. You know how important we thought they were going to be in all of the clean energy technologies, including clean coal, biomass, and new nuclear powerplants.

America's business stands ready, as we understand it, to develop new and innovative sources of energy under this program. But progress is either stalled or not moving rapidly enough to provide the guidelines or the process for applications for loans. It does no good for someone to have a new project, and we developed a no-cost-to-Government loan program, and not have them available. We need to know today when they are going to be available.

So, Secretary Garman, this is one you are going to have to work with us today and you are going to have to continue until it is done. If you need some help from us, we are here. We will also speak of weatherization. You know there is a problem there. That is out in the open. I do not need to raise it here myself.

I am deeply concerned about the $762 million cut to the environmental management program. That brings the distinguished Senator from the State of Washington here today. It also has one that hits at my heart too this time, so we may be on the same path.

We may be trying to succeed together. I do not know. But $762 million cut in that program? I recognize that we have completed Rocky Flats, right, a very good sign. You can hold up a flag and say for the first time, I think partly because Colorado was a great host State and worked collaboratively, we have a very big solution.

But that does not mean that a $762 million reduction in the remaining programs can be sustained. I am concerned about the current status of the waste treatment facility in Washington. I do not have the answers, but clearly we have to stay on this until it becomes a success like Rocky Flats maybe. Most of us will be gone by then, but let us say that we ought to at least wish for that day.

I am aware the cost estimates exceed $11 billion and I hope you can explain the Department's strategy for addressing this skyrocketing cost. I also must tell you that I am vitally interested to know how the Department intends to fulfill its commitment—and you must listen carefully to this—under a consent agreement with the State of New Mexico for cleanup at Los Alamos. Funding for this project has been cut by $50 million. Now, I do not know how we do that. I mean, we have done it in the past. We just ignore a court decree. But it happens to be in the chairman's State. That does not look too good, does it, I do not think. But anyway, we are going to work on it, right?

Let me say in closing about Yucca Mountain, I am concerned about the slow progress for the completion of the facility. I understand that the license application will not be ready until 2008. That is just getting the application ready. That does not mean anything has happened. I am aware that the administration is working on new legislation which authorizes a different approach to the repository. I have told them repeatedly that I will introduce it in their behalf so as to push it with some degree of vigor. That does not mean I will support it wholeheartedly. But we must see what it is.

Dr. Orbach, Secretary Garman, you have an important job in front of you, delivering on the President's promise of an American Competitive Initiative. You are aware that you are not the whole initiative. You are team players. I know you both have statements on all of this. You can expect questions on many of it, so do not try to cover them all. I would like you to try to summarize in 10 minutes if you can do that, and then right now I will include your full statement in the record.

We will start with you, Mr. Secretary. No, we will not. We will start with Senators. Okay, we are going to go with you, Senator.

STATEMENT OF SENATOR PATTY MURRAY

Senator MURRAY. Thank you, Mr. Chairman, and good morning to both Under Secretary Garman and Dr. Orbach. I know we have a lot of ground to cover, so I will keep my statement brief.

I just wanted to say that I am a long-time advocate of increased funding for the Office of Science and I am pleased to see the administration has requested $4.1 billion, a 14 percent increase over fiscal year 2006. That is good news. For the United States to continue to be a leader in the sciences, we have to make the decision to invest in our own future.

I was also relieved to see a request of $690 million for the waste treatment plant. This construction project is the cornerstone to cleaning up Hanford and we have to get it back on track. However, this budget has some gaps, including the $52 million reduction of funds for the tank farm activities. Secretary Bodman described the radioactive wastes on that site as among the most dangerous chemicals known to man. That was waste that was created during World War II and the cold war and Washington State has fulfilled its national duty during those times, and now the Federal Government has a responsibility to fulfill its national duty to clean up that site. It is about protecting the health and the welfare of the region and the people who live there.

Under Secretary Garman, I read your written testimony last night and I just wanted you to know I take issue with your statement where you say, "It surprises many to learn that we spend more each year to clean up Hanford, roughly $1.8 billion, than we do annually on our entire portfolio of applied energy research and development, which is approximately $1.5 billion. To put it bluntly, this is a budget that begins to put the energy back in the Department of Energy."

Well, Mr. Garman, it sounds to me like you are suggesting that our efforts to clean up the polluted sites in the Nation are coming at the cost of Federal energy R&D, and it is sort of a slap in the face to the people of Washington State to imply that their need for clean air and clean water and cleanup of this critical site and their contribution to winning a war is detracting from the investments in the Federal R&D portfolio.

I want to remind you this Nation has a moral and a legal obligation to clean up Hanford site, and if there is a belief that the Federal investment in applied energy R&D has been lacking in recent years it is because the administration has made that choice every year with its budget proposals. We have to fulfill our obligations to clean up and we need to invest in R&D. One does not preclude the other.

So I just wanted to make that clear and I do have a number of questions I will be asking when we get to that round.

Senator BOND [presiding]. Senator Allard.

STATEMENT OF SENATOR WAYNE ALLARD

Senator ALLARD. Thank you, Mr. Chairman, for holding this hearing today. As you know, I am co-chairman of the Senate Renewable Energy and Energy Efficiency Caucus and represent the State which the National Renewable Energy Laboratory calls home. As a scientist myself, I have always been a strong supporter of research funding in all areas.

For these reasons I have a special interest in today's hearing. Today more attention is being focused on clean energy and energy efficiency technologies. This is a time when the development of alternative energy sources is becoming more important than ever. We must continue to provide incentives for the implementation of renewable technologies and for the infrastructure necessary to support these renewable sources.

These technologies are a necessary step in balancing our domestic energy portfolio, increasing our Nation's energy security, and

advancing our country's technological excellence. Renewable energy is a very important way that we can begin to reduce the demand for oil and thereby help to make our country more secure. There are great opportunities for solar, wind, geothermal, biomass, fuel cells, and hydro to make significant contributions. Research and the input of both Government and industry entities is very important to allowing these opportunities to live up to their potential.

The National Renewable Energy Laboratory in Colorado can and does make an incredible contribution to the development of these resources. Technologies being developed at NREL, whether providing alternative fuels and power or making our homes and vehicles more energy efficiency, are vital to our Nation's energy progress.

But what is really unique about NREL is that their focus is for moving research and scientific discovery to the market. That means that the money that we spend on science is being designed in a practical way to help Americans and American consumers. I think that is very unique about the National Renewable Energy Laboratory that we have in Colorado.

Recently, due to an abundance of earmarks, NREL was faced with dramatic funding cutbacks that resulted in lost jobs. The Department did everything it could to mitigate the job losses, but we still lost 32 positions. Thankfully, DOE was able to find an additional $5 million and these jobs were restored. I would like to thank you, Mr. Garman, who is here today, Secretary Bodman and everyone at DOE and NREL for working to make that situation right. I hope to work with DOE and my colleagues on this subcommittee to see that a situation like this does not happen again.

I was also very disappointed to learn that much of the money being saved by the accelerated cleanup of Rocky Flats has not been given to other DOE cleanup sites for accelerated cleanup. As I understand the DOE's fiscal budget 2007 request, the environmental management account has been reduced by over $740 million from the amount appropriated in fiscal year 2006. It has always been my understanding that the money saved by accelerating Rocky Flats would be used for the cleanup of other sites. We were spending over $500 million at Rocky Flats alone. This was one of the reasons Senator Domenici and others were willing to support accelerated cleanup of Rocky Flats.

PREPARED STATEMENT OF SENATOR WAYNE ALLARD

I look forward to working with the committee to ensure that R&D in all fields of energy technology are funded in a manner that is responsible, but sufficient to ensure that the development and implementation of new technologies continues.

Thank you, Mr. Chairman.

[The statement follows:]

PREPARED STATEMENT OF SENATOR WAYNE ALLARD

Mr. Chairman, thank you for holding this hearing today. As you know, I am co-chairman of the Senate Renewable Energy & Energy Efficiency Caucus and represent the State which the National Renewable Energy Laboratory calls home. And, as a scientist myself, I have always been a strong supporter of research funding in all areas. For these reasons, I have a special interest in today's hearing.

Today more attention is being focused on clean energy and energy efficient technologies. This is a time when the development of alternative energy sources is becoming more important than ever. We must continue to provide incentives for the implementation of renewable technologies, and for the infrastructure necessary to support these renewable sources. These technologies are a necessary step in balancing our domestic energy portfolio, increasing our Nation's energy security and advancing our country's technological excellence.

Renewable energy is a very important way that we can begin to reduce the demand for oil and, thereby, help to make our country more secure. There are great opportunities for solar, wind, geothermal, biomass, fuel cells and hydro to make significant contributions. Research and the input of both government and industry entities is very important to allowing these opportunities to live up to their potential.

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I look forward to working with the committee to ensure that R&D in all fields of energy technology are funded in a manner that is responsible, but sufficient to ensure that the development and implementation of new technologies continues.

Senator DOMENICI [presiding]. Thank you very much, Senator, and you are to be commended on the work you did with reference to Rocky Flats, truly an example of great cooperation.

Senator ALLARD. Well, Mr. Chairman, as you know, this would not have happened without your cooperation and the other sites around the country. It was because of everybody working together. The idea was that when we got this cleaned up that money was going to be available for other sites to accelerate their cleanup, to do things that are actually going to lead to cleanup like we experienced at Rocky Flats. So thank you.

Senator DOMENICI. Now, Senator Bond.

STATEMENT OF SENATOR CHRISTOPHER S. BOND

Senator BOND. Thank you very much, Mr. Chairman. I appreciate the opportunity to comment. As you have already so well stated, Mr. Chairman, our Nation's energy problems are as serious as ever. Over the past year we have experienced record prices for crude oil, natural gas, gasoline, and diesel fuel, at least in part due to the devastation of Hurricane Katrina. But it has pointed out how fragile our energy supply is.

Again, as the chairman has noted, the simple fact of the matter is that our Nation's energy supplies are not keeping up with demand. We are importing more oil and natural gas than ever and we are doing very little to develop our own domestic sources of energy. There are solutions to the problems. In addition to strong con-

servation measures, we need to increase our domestic supplies of energy in oil, in gas, and nuclear power, and we must also develop alternative and renewable sources of energy.

But I am particularly focused on the use of coal and the development of new and cleaner coal-based technologies to provide us with the alternative resource to meet our Nation's growing energy needs. Coal already provides more than half our Nation's electricity and it is the largest single source of overall domestic energy production at more than 31 percent of the total.

Coal, as we all know, can be converted through proven, existing, modern technology into clean zero-sulfur synthetic oil and oil products at roughly $35 a barrel, compared to the current $65-or-so price per barrel of oil. Coal liquefaction or coal-to-liquid refineries can be located anywhere that coal is produced. This proven technology can produce clean transportation fuels using domestic coal, thereby expanding our supply of transportation fuels while decreasing our dependence on foreign sources of energy. This includes gasoline, diesel, and other liquid fuels.

We are looking forward to the report from the Coal Council that I believe will put us on the path to independence from overseas import of oil and gas by 2025.

Now, the great thing about coal-refined diesel fuel is it will be low in sulfur. It will come out cleaner, enable refiners to meet the clean air requirements, and help the public lead healthier lives.

Now, a lot of us were really encouraged to hear the President highlight the importance of increasing this investment in clean coal technologies and zero emission coal-fired plants in his State of the Union Address in January. High hopes. The President's Clean Coal Power Initiative represents an important first step in the development of clean coal technologies. Nevertheless, that euphoria was met with the stunning news when we saw that the 2007 budget request for coal research initiatives and the Clean Coal Power Initiative. As you know, title IV of the Energy Policy Act of 2005 authorizes $200 million for the Clean Coal Power Initiative in 2007, but the President's budget request comes out at only $5 million for this important program, over a $44 million cut.

I hope that someone here can tell OMB about the President's Clean Coal Power Initiative. It would be very helpful if the right hand knew what the left hand was doing. The CCPI is a cooperative, cost-shared program between the Government and industry to demonstrate emergency technologies in coal-based power generation, to accelerate commercialization. Technologies are selected with the goal of accelerating development and deployment of coal technologies that will meet environmental standards in a cost effective manner.

The prior years' appropriations have enabled the Department of Energy to conduct two clean coal demonstration programs during the past 6 fiscal years, but the $5 million proposed by OMB for this program will not even allow the DOE and industry to conduct a demonstration project every other year. Our researchers may develop clean coal technologies in the lab, but unless they can demonstrate these technologies we will not see the progress.

I believe the Clean Coal Power Initiative should be funded at at least $150 million to conduct another clean coal demonstration

project in the near future. With over 250 years worth of recoverable coal reserves in the United States, coal is without question our Nation's most abundant resource. It is estimated that these coal reserves are equivalent to roughly 800 billion barrels of oil, making the United States the Saudi Arabia of coal. Those of us in the heartland who take pride now that through ethanol and soy diesel we are beginning to make a contribution to our energy needs, see the potential that the coal that we have throughout the Nation, not only the Midwest, but in Alaska and all over, can be realized, making us energy producers rather than just energy consumers.

In light of the growing global demand for oil and gas, our Nation's increased dependence on foreign sources of energy, and our abundant supply of domestic coal, I think it is imperative we promote and adequately fund clean coal technologies to meet the Nation's urgent needs for reliable and affordable sources of energy.

The coal research initiative and the clean coal power initiative administered by DOE are vital to the future use of our Nation's most abundant fossil fuel resources and they must be adequately funded. The budget that we were presented just does not do that.

I will leave a question for the record that will come as no surprise, I am sure. Mr. Garman, you may want to address it in your remarks, but my question would be: In light of the small amount of the funding for the program, is the administration truly serious about promoting clean coal technologies in its effort to reduce dependence on foreign oil and promoting energy independence?

Thank you, Mr. Chairman, my colleagues, and I thank you, gentlemen.

PREPARED STATEMENT OF SENATOR THAD COCHRAN

Senator DOMENICI. Thank you, Senator. Senator Cochran has also submitted a statement which will be included for the record.

[The statement follows:]

PREPARED STATEMENT OF SENATOR THAD COCHRAN

Mr. Chairman, I appreciate your holding this hearing to review budgets of the Department of Energy's Office of Science, Office of Nuclear Energy, Office of Fossil Energy, Office of Environmental Management as well as many other important accounts with the Department of Energy. I want to join you in thanking the witnesses for being here to provide testimony and answer questions.

I am pleased that the Department is continuing to look for alternate and renewable sources of energy to correct the trend toward unnecessary reliance on foreign sources of oil and gas. My State continues to conduct research to develop cleaner and more efficient sources of energy. After Hurricane Katrina, fuel costs rose as much as $3 per gallon and finding diesel to transport necessities or to run the electrical generators used to cool poultry production facilities became a challenge. Our biodiesel suppliers provided this needed fuel which proved not only to be a cleaner fuel, but a fuel that is a substitute for foreign oil.

Mr. Chairman, I look forward to working with you this year on these important accounts as well as the new American Competitiveness Initiative and the Advanced Energy Initiative.

STATEMENT OF DAVID K. GARMAN

Senator DOMENICI. Now we will proceed. Under Secretary Garman, please let us hear from you at this point.

Mr. GARMAN. Well, it is clear from the opening statements from the Senators that I am going to be on a bit of the hot seat this

morning and it does not pay me to belabor that any with a long statement. So I will be extremely brief. I would just like to take 4 minutes to stress just a few key points.

If you ask me to distill this entire DOE budget, with all its puts and takes, into a single theme or concept, it would be that we are emphasizing science, research and development in pursuit of transformational energy technologies. This budget significantly increases our investments in clean energy research and the fundamental science to support that research. We have proposed some significant increases in areas such as: applied solar energy research, up 78 percent; applied biomass research, up 65 percent; applied hydrogen research, up 42 percent; and applied nuclear energy research, up 56 percent.

We have also proposed, as you have noted, a significant increase in basic energy sciences under the Direction of Dr. Orbach, recognizing that we must strengthen the connections between our basic and applied energy work. We are determined to make the activities in basic sciences more relevant and more strongly linked to the applied energy programs working to advance practical energy technologies, such as solar, nuclear, hydrogen, and biomass.

Because these increases have been sought within an overall departmental budget that is level funded, we have had to propose some reductions in some otherwise worthy programs—low income weatherization comes to mind—because we felt it was important to articulate priorities and make those tough calls mindful of the practical limitations on discretionary spending that you as appropriators face.

As you all know, the Department of Energy could more accurately be referred to as the Department of Nuclear Weapons, Radioactive Cleanup, Science, and Energy, in that order, if the Department's name were to more accurately capture its activities and the priority placed on them as reflected by our levels of spending on those activities.

I do not mean, Senator Murray, and I hope you do not take my statement as you did—we did not intend or I do not intend to say that we are going to somehow shirk our environmental obligations. We take on those obligations. We know those obligations are ours. In saying that we spend less on applied energy research at the Department than we do on things such as the cleanup of Hanford, I am not suggesting that we should spend less on the cleanup at Hanford. I am suggesting rather we should be spending more on applied energy research, and that was the point of the statement and I hope you do not misconstrue. I did want to make that clear.

This is a budget that does begin to put energy back in the Department of Energy, not just in the applied energy programs but in the science programs managed by Dr. Orbach that can contribute totally new thinking and new approaches in meeting our energy challenges. And at a time when this Nation is as concerned as it is about energy security and clamoring for new energy solutions, we should strive to do nothing short of that.

PREPARED STATEMENT

With that, Mr. Chairman, I can either go into some of the things that were raised or just prepare to take the questions and interact.

I am aware of the time constraints of the committee and I want to be respectful of that time.

[The statement follows:]

PREPARED STATEMENT OF DAVID K. GARMAN

Mr. Chairman and members of the committee, thank you for this opportunity to appear to discuss the President's fiscal year 2007 budget request for the Department of Energy (DOE). This testimony will focus on the budget requests for the Office of Energy Efficiency and Renewable Energy, the Office of Electricity, the Office of Nuclear Energy, the Office of Fossil Energy, the Office of Environmental Management, and the Office of Civilian Radioactive Waste Management. But let me first provide some context.

This budget recognizes that science-driven technology is at the heart of the Department of Energy's missions, and that our national laboratories and facilities, together with universities and research activities in the private sector, must be better leveraged to enhance America's national security, economic security, and energy security.

Therefore, we have proposed to significantly increase our investment in science, in keeping with the American Competitiveness Initiative.

We have also proposed to significantly increase investments in clean energy research in areas such as solar, biomass, hydrogen, wind, and nuclear, in keeping with the Advanced Energy Initiative.

Notably, we have proposed these increases within a flat Departmental budget. Since any realistic pursuit of new or enhanced initiatives must be mindful of practical limitations on discretionary spending, we have prioritized our mission activities, which resulted in proposed reductions in areas such as low-income weatherization—not because we regard these as unworthy activities—but because we know that you are as mindful of the constraints on discretionary spending as we are.

As Secretary Bodman has observed, the Department of Energy could more accurately be referred to as the Department of Nuclear Weapons, Radioactive Cleanup, Science and Energy—in that order—if the Department's name were to more accurately capture its activities and the priority placed on them as reflected by our investments. It surprises many to learn that we spend more each year to cleanup Hanford, roughly $1.8 billion dollars, than we do annually on our entire portfolio of applied energy Research and Development (R&D), which is approximately $1.5 billion dollars. To put it bluntly, this is a budget that begins to put the "energy" back in the Department of Energy. Not just in the applied energy programs, but in the science programs that can contribute new thinking and new approaches in meeting our energy challenges. We are determined to make the activities in basic sciences more relevant and more strongly linked to the applied energy programs working to advance practical energy technologies in areas such as solar, nuclear, hydrogen and biomass. At a time when this Nation is concerned about energy security and clamoring for new clean energy solutions, we should strive to do nothing short of that.

With respect to the applied energy technologies, the President's Advanced Energy Initiative provides a 22 percent increase for research that can help reduce America's dependence on foreign oil and advance clean energy technologies. The fiscal year 2007 budget proposes $149.7 million for Biomass and Biorefinery Systems Research and Development (R&D) program to support the new Biofuels Initiative to develop cost competitive ethanol from cellulosic materials (agricultural wastes, forest residues, and bioenergy crops) by 2012. In addition, the budget request continues to pursue the vision of reducing America's dependence on foreign oil, reducing air pollution, and reducing greenhouse gas emissions through the development of new technologies, including hydrogen. The fiscal year 2007 budget requests a total of $289.5 million (including $1.4 million requested by the Department of Transportation) to support implementation of the President's Hydrogen Fuel Initiative. The fiscal year 2007 budget also provides a 27 percent increase for advanced battery technologies that can improve the efficiency of conventional hybrid electric vehicles (HEV) and help make "plug-in" HEVs commercially viable.

To help develop clean, affordable electricity, the fiscal year 2007 budget includes $148.4 million for a new Solar America Initiative to develop cost competitive solar photovoltaic technology by 2015. The fiscal year 2007 also advances the administration's commitment to the FutureGen project, which will establish the capability and feasibility of co-producing electricity and hydrogen from coal with near-zero atmospheric emissions of pollutants and greenhouse gasses.

Any serious effort to stabilize greenhouse gasses in the atmosphere while providing the increasing amounts of energy for economic development and growth requires the expanded use of nuclear energy. This will inevitably require us to address the spent fuel and proliferation challenges that confront the expanded, global use of nuclear energy. Therefore, the Department's fiscal year 2007 budget features $250 million to begin investments in the Global Nuclear Energy Partnership (GNEP), a comprehensive approach to enable an expansion of nuclear power in the United States and around the world, to promote non-proliferation goals; and to help resolve nuclear waste disposal issues. GNEP is a complex, challenging undertaking that will take many years to realize, which is why the Department proposes to begin research now.

As a complement to the GNEP strategy, the Department will continue to pursue a permanent geologic storage site for nuclear waste at Yucca Mountain, and the fiscal year 2007 budget includes $544.5 million to support this goal. Based on technological advancements that would be made through GNEP, the volume and radiotoxicity of waste requiring permanent disposal at Yucca Mountain will be greatly reduced, delaying the need for an additional repository indefinitely.

GNEP builds upon the successes of programs initiated under President Bush's leadership to encourage the construction of new nuclear powerplants here in the United States. The fiscal year 2007 budget includes $632.7 million for nuclear energy programs, a $97.0 million increase above the fiscal year 2006 appropriation. In addition to the $250 million for GNEP within the Advanced Fuel Cycle Initiative, Generation IV (Gen IV) research and development ($31.4 million) will improve the efficiency, sustainability, and proliferation resistance of advanced nuclear systems, and Nuclear Power 2010 ($54.0 million) will lead the way, in a cost-sharing manner, for industry to order new, advanced light-water reactors by the end of this decade. In addition, ongoing implementation of the Energy Policy Act of 2005 (EPACT) will establish Federal insurance to protect sponsors of the first new nuclear powerplants against the financial impact of certain delays during construction or in gaining approval for operation that are beyond the sponsors' control.

The Department of Energy's budget request remains mindful of our legacy obligations. To meet our environmental cleanup commitments arising from nuclear activities during the Manhattan Project and the Cold War, the budget submission requests $5.8 billion to clean up legacy nuclear waste sites. DOE has accelerated cleanup at the legacy nuclear waste sites and recently announced completion of cleanup at Rocky Flats, a former nuclear weapons plant located outside of Denver, Colorado. In 2006, DOE will also complete environmental cleanup of the Fernald and Columbus sites in Ohio, and several other sites as well.

To provide better context for programmatic decisions, the Department expanded the development of 5-year budget plans. We still have work ahead of us to make this planning more rigorous and meaningful, but we have made the start.

And at the behest of Secretary Bodman, we are working to institute straight-forward operating principles which set the tone for further improving the management of the Department. These principles are:

—Accept no compromises in safety and security;
—Act with a sense of purposeful urgency;
—Work together, treating people with dignity and respect;
—Make the tough choices;
—Keep our commitments;
—Manage risk through informed decisions.

ADVANCING AMERICA'S ECONOMIC AND ENERGY SECURITY

Turning now to some of the specific proposals in the fiscal year 2007 budget, the request of $1.2 billion for energy efficiency and renewable energy activities reallocates resources to emphasize technologies with the potential for reducing our growing reliance on oil imports and for producing clean electricity with reduced emissions. It includes two new Presidential initiatives; Biofuels and Solar America. The fiscal year 2007 budget proposes $149.7 million for the Biofuels Initiative to develop by 2012 affordable, domestically produced bio-based transportation fuels, such as ethanol, from cellulosic feedstocks (such as agricultural wastes, forest residues, and bioenergy crops), and encourage the development of biorefineries. Biomass has the promise to deliver a plentiful domestic energy resource with economic benefits to the agricultural sector, and to directly displace oil use. The Solar America Initiative accelerates the development of solar photovoltaics, a technology that converts energy from the sun into electricity. Further development can help this emissions-free technology achieve efficiencies to make it cost-competitive with other electricity genera-

tion sources by 2015. The fiscal year 2007 budget provides $148.4 million for the Solar Energy Program that comprises the initiative.

In addition to funding increases for biomass and solar energy, the Energy Efficiency and Renewable Energy budget request includes $195.8 million to support continued research and development in hydrogen and fuel cell technology which holds the promise of an ultra-clean and secure energy option for America's energy future. The increase of $40.2 million above the fiscal year 2006 appropriation accelerates activities geared to further improve the development of hydrogen production and storage technologies, and evaluate the use of hydrogen as an emissions-free transportation fuel source. The President's Hydrogen Fuel Initiative is funded at $289.5 million and includes $195.8 million for DOE's Energy Efficiency and Renewable Energy program, $23.6 million for DOE's Fossil Energy program, $18.7 million for DOE's Nuclear Energy program, $50.0 million for DOE's Science program, and $1.4 million for the Department of Transportation.

While the budget proposes increases for Biomass, Solar and Hydrogen research, the Geothermal Program will be closed out in fiscal year 2007 using prior year funds. The 2005 Energy Policy Act amended the Geothermal Steam Act of 1970 in ways that should spur development of geothermal resources without the need for subsidized Federal research to further reduce costs.

Nuclear power, which generates 20 percent of the electricity in the United States, contributes to a cleaner, more diverse energy portfolio. In fiscal year 2007 a total of $632.7 million is requested for nuclear energy activities. Within the total, $250 million will support the Global Nuclear Energy Partnership (GNEP). GNEP is a comprehensive strategy to enable an expansion of nuclear power in the United States and around the world, to promote nuclear nonproliferation goals; and to help resolve nuclear waste disposal issues.

GNEP will build upon the administration's commitment to develop nuclear energy technology and systems, and enhance the work of the United States and our international partners to strengthen nonproliferation efforts. GNEP will accelerate efforts to:

—Enable the expansion of emissions-free nuclear power domestically and abroad;
—Reduce the risk of proliferation; and
—Utilize new technologies to recover more energy from nuclear fuel and dramatically reduce the volume of nuclear waste.

Through GNEP, the United States will work with key international partners to develop new recycling technologies that do not result in separated plutonium, a traditional proliferation risk. Recycled fuel would then be processed through advanced burner reactors to extract more energy, reduce waste and actually consume plutonium, dramatically reducing proliferation risks. As part of GNEP, the United States and other nations with advanced nuclear technologies would ensure developing nations a reliable supply of nuclear fuel in exchange for their commitment to forgo enrichment and reprocessing facilities of their own, also alleviating a traditional proliferation concern.

GNEP will also help resolve America's nuclear waste disposal challenges. By recycling spent nuclear fuel, the heat load and volume of waste requiring permanent geologic disposal would be significantly reduced, delaying the need for an additional repository indefinitely.

The administration continues its commitment to open and license Yucca Mountain as the Nation's permanent geologic repository for spent nuclear fuel, a key complement to the GNEP strategy. Managing and disposing of commercial spent nuclear fuel in a safe and environmentally sound manner is the mission of DOE's Office of Civilian Radioactive Waste Management (RW).

To support the near-term domestic expansion of nuclear energy, the fiscal year 2007 budget seeks $54.0 million for the Nuclear Power 2010 program to support continued industry cost-shared efforts to reduce the barriers to the deployment of new nuclear powerplants. The technology focus of the Nuclear Power 2010 program is on Generation III+ advanced light water reactor designs, which offer advancements in safety and economics over the Generation III designs. If successful, this 7-year, $1.1 billion project (50 percent to be cost-shared by industry) could result in a new nuclear powerplant order by 2009 and a new nuclear powerplant constructed by the private sector and in operation by 2014.

Funding of $1.8 million is provided in fiscal year 2007 to implement a new program authorized in the recently enacted Energy Policy Act of 2005. The program will allow DOE to offer risk insurance to protect sponsors of the first new nuclear powerplants against the financial impact of certain delays during construction or in gaining approval for operation that are beyond the sponsors' control. This program would cover 100 percent of the covered cost of delay, up to $500 million for the first two new reactors and 50 percent of the covered cost of delay, up to $250 million

each, for up to four additional reactors. This risk insurance offers project sponsors additional certainty and incentive to provide for the construction of a new nuclear powerplant by 2014.

The fiscal year 2007 budget request includes $31.4 million to continue to develop Next-generation nuclear energy systems known as Generation IV (GenIV). These technologies will offer the promise of a safe, economical, and proliferation resistant source of clean, reliable, sustainable nuclear power with the potential to generate hydrogen for use as a fuel. Resources in fiscal year 2007 for GenIV will be primarily focused on long-term research and development of the Very-High Temperature Reactor.

The University Reactor Infrastructure and Educational Assistance program was designed to address declining enrollment levels among U.S. nuclear engineering programs. Since the late 1990's, enrollment levels in nuclear education programs have tripled. In fact, enrollment levels for 2005 have reached upwards of 1,500 students, the program's target level for the year 2015. In addition, the number of universities offering nuclear-related programs also has increased. These trends reflect renewed interest in nuclear power. Students will continue to be drawn into this course of study, and universities, along with nuclear industry societies and utilities, will continue to invest in university research reactors, students, and faculty members. Consequently, Federal assistance is no longer necessary, and the 2007 budget proposes termination of this program. The termination is also supported by the fact that the program was unable to demonstrate results from its activities when reviewed using the Program Assessment Rating Tool (PART), supporting the decision to spend taxpayer dollars on other priorities. Funding for providing fresh reactor fuel to universities is included in the Research Reactor Infrastructure program, housed within Radiological Facilities Management.

Recognizing the abundance of coal as a domestic energy resource, the Department remains committed to research and development to promote its clean and efficient use. U.S. coal accounts for 25 percent of the world's coal reserves. For the last 3 years, the Department has been working to launch a public-private partnership, FutureGen, to develop a coal-based facility that will produce electricity and hydrogen with essentially zero atmospheric emissions. This budget includes $54 million in fiscal year 2007 and proposes an advance appropriation of $203 million for the program in fiscal year 2008. Funding for FutureGen will be derived from rescinding $203 million in balances no longer needed to complete active projects in the Clean Coal Technology program. Better utilization of these fund balances to support FutureGen will generate real benefits for America's energy security and environmental quality.

The budget request for fiscal year 2007 includes $4.6 million to support Alaska Natural Gas Pipeline activities authorized by Congress in late 2004. Within the total amount of $4.6 million, $2.3 million will be used to support an Office of the Federal Coordinator and the remaining $2.3 million will support the Loan Guarantee portion of the program. Once constructed, this pipeline will be capable of delivering enough gas to meet about 10 percent of the U.S. daily natural gas needs.

The budget request proposes to terminate the oil and gas research and development programs, which have sufficient market incentives for private industry support, to other energy priorities.

The Energy Policy Act of 2005 established a new mandatory oil and gas research and development (R&D) program, called the Ultra-Deep and Unconventional Natural Gas and Other Petroleum Research program, that is to be funded from Federal revenues from oil and gas leases beginning in fiscal year 2007. These R&D activities are more appropriate for the private-sector oil and gas industry to perform. Therefore, this budget proposes to repeal the program through a future legislative proposal, although we will faithfully execute current law until such time that Congress acts affirmatively on that legislative proposal.

The fiscal year 2007 budget includes $124.9 million for a refocused portfolio of energy reliability and assurance activities in the Office of Electricity Delivery and Energy Reliability. This will support research and development in areas such as high temperature superconductivity, and simulation work needed to enhance the reliability and effectiveness of the Nation's power supply. This office also operates the Department's energy emergency response capability and led DOE's support effort during and after the Gulf Coast hurricanes.

ENSURING A CLEAN ENVIRONMENT

To deliver on the Department's environmental cleanup commitments following 50 years of nuclear research and production from the Cold War, in 2002 the Environmental Management program underwent a major transformation that would enable

the Department to perform its cleanup activities faster than previously estimated. Working in partnership with the public, States and regulators, the Environmental Management (EM) program has made significant progress in the last 4 years to shift away from risk management toward risk reduction. By the end of fiscal year 2006, the cleanup of a total of 86 DOE nuclear legacy sites will be complete. This includes the recently announced completion of Rocky Flats and the anticipated fiscal year 2006 completion of Fernald and Columbus sites in Ohio. While encouraged by the results demonstrated thus far, the program continues to stay focused on the mission and is working aggressively to enhance and refine project management approaches while addressing the regulatory and legal challenges associated with this complex environmental cleanup program.

In fiscal year 2007, the budget includes $5.8 billion to continue environmental cleanup with a focus on site completion, with eight sites or areas to be completed in the 2007 to 2009 timeframe. This budget request is reduced from the fiscal year 2006 budget request of $6.5 billion primarily reflecting cleanup completion at some sites in fiscal year 2006 and the subsequent transfer of post-closure work activities. As cleanup work is completed over the next 5 years at sites without a continuing mission, EM will transfer long-term surveillance and monitoring activities and management of pension and benefit programs to the Office of Legacy Management. For those with continuing missions, these activities will be transferred to the cognizant program office.

The $5.8 billion budget request remains focused on EM's mission of reducing risk by cleaning up sites—consequently also reducing environmental liability—and will support the following key activities:

—Stabilizing radioactive tank waste in preparation for disposition (about 30 percent of the fiscal year 2007 request for EM);
—Dispositioning transuranic and low-level wastes (about 15 percent of the request for EM);
—Storing and safeguarding nuclear materials (about 15 percent of the request for EM);
—Decontaminating and decommissioning excess facilities (about 20 percent of the request for EM); and
—Remediating major areas of our large sites (Hanford, Savannah River Site, Idaho National Laboratory, and Oak Ridge Reservation) (about 10 percent of the request for EM).

One of the significant cleanup challenges is the management and treatment of high-level radioactive liquid waste at the Hanford Waste Treatment and Immobilization Plant (WTP). In fiscal year 2007, $690 million is proposed for the WTP project. The plant is a critical component of the program's plans to clean up 53 million gallons of radioactive waste currently stored in 177 aging underground storage tanks.

By June 2006, the U.S. Army Corps of Engineers is expected to complete an independent cost validation, deploying more than 25 professionals experienced in cost estimating, design, construction, and commissioning. The Department plans to utilize the results from several reviews to validate cost and schedule for this project.

The Department, while responsible for the cleanup and disposal of high-level radioactive waste generated from the Cold War, is also responsible for managing and disposing of commercial spent nuclear fuel in a safe and environmentally sound manner. The latter responsibility is the mission of DOE's Office of Civilian Radioactive Waste Management (RW).

The Nation's commercial and defense high-level radioactive waste and spent nuclear fuel will be safely isolated in a geologic repository to minimize risk to human health and the environment. The fiscal year 2007 budget requests $544.5 million to establish a geologic repository at Yucca Mountain, Nevada. This administration is strongly committed to establishing Yucca Mountain as the Nation's first permanent repository for high-level waste and spent nuclear fuel. Licensing and developing a repository for the disposal of these materials will help set the stage for an expansion of nuclear power through the President's GNEP initiative, which could help to diversify our energy supply and support our economic future. Permanent geological disposal at Yucca Mountain offers the safest, most environmentally sound solution for dealing with this challenge.

To further advance the administration's commitment to the establishment of Yucca Mountain, the Department intends to submit to Congress legislation to address land withdrawal, funding and other issues that are important to the program's success.

As the Environmental Management program completes cleanup of sites throughout the DOE complex, management of post closure activities at these sites will transfer to the Office of Legacy Management (LM). In fiscal year 2007, $201.0 mil-

lion is proposed to provide long-term surveillance and maintenance, long-term response actions, oversight and payment of pensions and benefits for former contractor retirees, and records management activities at closure sites transferred to LM. The majority of funding ($122.4 million) is associated with the transfer of post closure responsibilities and funding of three major sites from EM to LM in fiscal year 2007. These sites are: Rocky Flats, $90.8 million; Fernald, $26.5 million; and a group of sites known as the Nevada off sites, $5.1 million. The cumulative effect of these three transfers results in a 150 percent increase in the Legacy Management budget matched by a corresponding decrease in the Environmental Management budget.

IMPROVING MANAGEMENT AT THE DEPARTMENT OF ENERGY

Underpinning and supporting all of the programs above, the Department of Energy has continued to make strides in meeting President Bush's challenge to become more efficient, more effective, more results-oriented, and more accountable for performance. Over the past 4 years, the President's Management Agenda (PMA) has been the framework for organizing the Department's management reform efforts.

To better manage human capital, the Department implemented a performance management system to link employee achievement at all levels with mission accomplishment. In fiscal year 2006, DOE will publish, communicate and implement a revised 5-year Human Capital Management Strategic Plan as well as a formal leadership succession plan.

In fiscal year 2006 and fiscal year 2007, DOE will expand the availability of financial data in support of decision-making by continuing to implement the Integrated Management Navigation (I-MANAGE) system, specifically in the areas of budget and procurement through the Integrated Data Warehouse (IDW). The Department continues to apply Earned Value Management principles to each of its major information technology investments. In addition, DOE is partnering with other government agencies to develop a standardized and integrated human resources information system, and to develop a consolidated grants management system.

The Department continued its effort to institutionalize multi-year planning and strengthen the link between program performance and resource allocation decisions. The Program Assessment Rating Tool (PART) continues to be used to promote improved program performance. For programs that have not formally been reviewed by OMB, the PART process has been used for internal self-assessment.

A number of important milestones were reached in Real Property Management including the approval of the Asset Management Plan (AMP) by the Deputy Secretary. The AMP outlines an overall framework for the strategic management of the Department's $77 billion portfolio of Real Property Assets. Additionally, the 20,000 real property records in the Facilities Information Management System, the Department's repository of real property information, were populated and updated as required by the Federal Real Property Council for support of the Federal Real Property Profile. This information will be used to support real property management decisions department-wide.

As these examples indicate, the Department of Energy is using the PMA to address its many management challenges. The Department is working to become more streamlined, more efficient, and more results-oriented in fiscal year 2007 and beyond.

CONCLUSION

Energy is central to our economic and national security. Indeed, energy helps drive the global economy and has a significant impact on our quality of life and the health of our people and our environment. The fiscal year 2007 budget request balances the need to address short-term challenges while planning for long-term actions. The request reflects our belief that basic science research should remain strong if we are to remain competitive with our global partners. The request contains bold new initiatives in nuclear, biomass, and solar energy. It continues the President's strong commitment to clean coal, hydrogen, and fusion. The request honors our commitment to deal with civilian nuclear waste, as well as legacy waste from the Cold War, and to further our already successful nonproliferation programs in order to help ensure a safer world for generations to come.

This completes our testimony, and we would be pleased to respond to your questions today or in the future.

Senator DOMENICI. I think you should just right now off the top of your head start answering some of the things we raised. Take another 5 minutes.

COAL RESEARCH

Mr. GARMAN. All right. Let me first talk about coal, Senator Bond. We are proud of the fact that in this administration from the fiscal year 2002 budget to the present budget we have spent $2.2 billion on coal research, and we think that is very important. The President had made a promise that he would spend—he would request $2 billion over 10 years and it did not take him 10 years to fulfill that promise. He fulfilled it in 6, and we are proud of that.

It is true that there is a dramatic decrease proposed in one aspect of that coal research, the Clean Coal Power Initiative, which is a demonstration program, and, as you have noted, it has gone from about $49 million to $5 million. The other part of the story is that there is in the neighborhood of $500 million in unobligated funds sitting in that account, some of those funds dating back from the 1990's.

OMB and our own folks looked at that account balance and asked ourselves the question, are all of those moneys going toward good programmatic activities? Do we need to request more authority now? Might it be possible to take some of those funds, get them into a new solicitation, so that we can continue this work?

We do take the point. We think it is very important to have a demonstration program to test drive these technologies before Wall Street will fund them. We do think that is important. One of the things that Assistant Secretary Jared is looking at, who is sitting behind me now, is looking at what of those funds might be freed up and made available if they are not being productively used and quickly used now. We want to improve that program. We want to get the money moving more quickly and get those dollars in the game.

LOAN GUARANTEES

On the issue of loan guarantees, Mr. Chairman, which is something that you raised. The Secretary, who has something of a background in financial management, is personally involved in this with us and he is counseling that we take a cautious approach. As you know, the Department of Energy's track record in loan guarantees is mixed at best. We have made loan guarantees on geothermal programs in the past. Four of them failed. We have made three loan guarantees on synthetic fuels. One of them has been successful after default. We have made three loan guarantees in alcohol fuels programs. One of them, again after a default, is paying back against that.

Senator DOMENICI. How old are these programs?

Mr. GARMAN. They are old.

Senator DOMENICI. You bet.

Mr. GARMAN. They are quite old.

So we are batting 2 out of 6—I am sorry, 6 out of 14. So we have zeroed in on the loan guarantee provisions, specifically in title XVII of the Energy Policy Act and other places, as being incredible new tools at our disposal that we do want to employ.

I want to disavow you of this notion that somehow we are stalled. We have created a Loan Guarantee Office, and this is an office that is very important. It is an office that will conduct the

process, qualify lenders, manage proposal reviews, monitor the portfolio of the Department. We are working to seek expertise. There is a lot of expertise that you need, financial expertise, credit risk expertise, commercial viability assessment expertise, that we may or may not have inside the Department. So we are getting that expertise, acquiring it from outside where possible, contracting it if necessary.

We hope to be in a position to accept the first loan guarantee pre-applications for that universe of people who are self-payers under the provisions of the bill some time this summer, with a view that we might be in a position to make a contingent offer later this year. Now, I want to be clear. This is not a promise on our part. This is our internal goal. This is what we are hoping to achieve in the timeframe. Frankly, the Secretary is skeptical that we can pull it off that quickly, but his expectation is that we move as expeditiously as possible and, as you know, Secretary Bodman, is not a man that we relish letting down.

Senator DOMENICI. We are going to move to the soon-to-be Secretary.

Mr. GARMAN. So those are two of the issues.

Senator DOMENICI. But I do want to make a point——

Mr. GARMAN. Yes, sir.

Senator DOMENICI [continuing]. Because I do not think the testimony should be taken of these prior efforts as being efforts that are synonymous with the proposals contained within, for loan guarantees, in the new Policy Act. The new Policy Act provides for a completely different kind of loan guarantee, as you well know.

Mr. GARMAN. Yes, sir.

Senator DOMENICI. That loan guarantee is at zero cost to the government because the applicant pays for the costs. There is a significant cleansing mechanism for whether it is a good project or not because of that, and it will be a different kind of proposal.

What I am hearing you say is you are not slowing up on putting together all the apparatus, the structure needed. That is moving ahead as quickly as you can?

Mr. GARMAN. Correct. For instance, we are trying to use guidelines, as opposed to regulations, because a regulatory process would take another 18 months or longer, and that is something that we are working with the Office of Management and Budget to understand how we can move ahead in that realm.

Senator DOMENICI. We are now going to ask Dr. Orbach to give his testimony. You can do it however you would like. Your statement is in the record at this point without objection. Proceed.

OFFICE OF SCIENCE

STATEMENT OF RAYMOND L. ORBACH, Ph.D., DIRECTOR

Dr. ORBACH. Thank you, Mr. Chairman, members of the committee. I appreciate the opportunity to testify today and I appreciate the support that this committee has provided for science and its relationship to our Nation's energy security and economic competitiveness.

The fiscal year 2007 President's request, as you have noted, includes a $505 million increase in the Department of Energy science

program, and the President has announced his commitment to double the funding for basic research in the physical sciences over the next 10 years. We are going to use the increase in funding this year, with roughly half going to operations of our large-scale facilities and the other half to research, to competitively based research proposals from the entire community, to restore the balance between our facilities and our operations and our basic research program.

The instruments that we are building we believe will give the United States an order of magnitude dominance over all other facilities in the areas that we approach. We will be a full partner in ITER, contained in this budget. We will be placing on the floor three high-end computational structures for a variety of physical problems, the fastest in the non-defense world.

We will be continuing with construction of the world's first free electron X-ray laser. This machine will provide ten orders of magnitude dominance over any other hard X-ray source in the world today. More than that, its timing will enable us to observe the change in the electron clouds as chemical reactions take place and to determine the structure of individual macromolecules.

The Spallation Neutron Source will turn on in June of this year, a $1.4 billion project which is on time and on budget, and gives us an order of magnitude dominance for neutron scattering, pulse neutron scattering, in the world.

Four of our five nanocenters will start operations with the 2007 budget. These nanocenters will be unmatched anywhere in the world and will give our scientists and engineers opportunities to construct at the atomic level and understand the properties of the materials as they are being grown.

We will be contributing $60 million to R&D for the International Linear Collider, which we hope will restore American dominance in high-energy physics in the next decade. We will be increasing the power of the CEBAF, the Continuous Electron Beam Accelerator Facility, at Thomas Jefferson to 12 GEV, which will enable us to see the structure of individual quarks and gluons in the nucleus.

We will be contributing to the optimum operations of RHIC at Brookhaven to study the properties of the universe very close to its creation. Finally, we will be finishing our R&D and investing in project engineering design for the NSLS–2, which is the first of the fourth generation light sources. This will be an X-ray microscope capable of operating at one nanometer in size, which would be of the order of three atomic diameters. There is no other instrument like it in the world. In addition, it will have an energy resolution that will give us not only the structure but also the dynamics of these new materials as they are created.

I have gone through this to give you a sense of the impact that this augmentation in the Office of Science budget will have. We are fully aware that this request takes place in a period of budgetary stringency. We are indebted to the President for his foresight in recognizing the vital importance of America's continued leadership in the physical sciences to our Nation's global competitive position and our quest for greater energy security.

We are committed to upholding our part of the bargain by delivering truly transformational science and technologies, break-

through advances that will provide new pathways to energy security and ensure America's continued global economic leadership in the years ahead.

PREPARED STATEMENT

Mr. Chairman, I am pleased to discuss this budget with you today. I thank you and the committee for the opportunity to appear and for your support over the years for the science program. Thank you.

[The statement follows:]

PREPARED STATEMENT OF DR. RAYMOND L. ORBACH

Mr. Chairman and members of the subcommittee, thank you for the opportunity to testify today on the Office of Science's fiscal year 2007 budget request. I appreciate your strong support for basic research in the physical sciences, Mr. Chairman, and your understanding of the importance of this research to our Nation's energy security and economic competitiveness. I also want to thank the members of the subcommittee for their support. This budget represents a strong commitment on the part of the President to ensure continued U.S. leadership in the basic sciences. I believe this budget will enable the Office of Science to strengthen U.S. scientific leadership and carry out its mission to deliver the revolutionary discoveries and scientific tools that transform our understanding of energy and matter and advance our national, economic and energy security.

The Office of Science requests $4,101,710,000 for the fiscal year 2007 Science appropriation, an increase of $505,319,000 over the fiscal year 2006 appropriation. As part of the President's American Competitiveness Initiative, the fiscal year 2007 budget represents the beginning of the President's commitment to double, over 10 years, the sum of the research investment at the Office of Science, the National Science Foundation, and the Department of Commerce's National Institute of Standards and Technology. This commitment will help ensure that the United States remains the world leader in critical areas of basic scientific research; maintains an order of magnitude dominance for large-scale scientific facilities and instrumentation in the key fields of science and technology that will drive the 21st century economy; pursues the transformational technologies necessary for greater energy security and independence for our Nation; and nurtures and develops a world-class scientific and engineering workforce.

The Office of Science is the lead Federal supporter for basic research in the physical sciences in the United States, and the steward for fields such as systems biology for energy and the environment, materials science, high energy physics, nuclear physics, heavy element chemistry, plasma physics, magnetic fusion, and catalysis. It also supports unique and vital components of U.S. research in climate change and geophysics. Researchers funded through the Office of Science are working on some of the most pressing scientific challenges of our age including: (1) Harnessing the power of microbial communities for: energy production from renewable sources, carbon sequestration, and environmental remediation; (2) Expanding the frontiers of nanotechnology to develop materials with unprecedented properties for widespread potential scientific, energy, and industrial applications; (3) Pursuing the breakthroughs in materials science, nanotechnology, biotechnology, and other fields needed to make solar energy more cost-effective; (4) Demonstrating the scientific and technological feasibility of creating and controlling a sustained burning plasma to generate energy, as the next step toward making fusion power a commercial reality; (5) Using advanced computation, simulation, and modeling to understand and predict the behavior of complex systems, beyond the reach of our most powerful experimental probes, with transformational impact on a broad range of scientific and technological undertakings; (6) Understanding the origin of the universe and nature of dark matter and dark energy; and (7) Resolving key uncertainties and expanding the scientific foundation needed to understand, predict, and assess the potential effects of atmospheric carbon on climate and the environment.

U.S. preeminence in science, technology, and innovation will depend on the continued availability of the most advanced scientific research facilities for our researchers. The Office of Science builds and operates the world's most powerful array of scientific facilities and instruments, including advanced synchrotron light sources, the new Spallation Neutron Source, state-of-the-art Nanoscale Science Research Centers, genome sequencing facilities, supercomputers and high-speed networks, cli-

mate and environmental monitoring capabilities, and particle accelerators for high energy and nuclear physics. We are in the process of developing an X-ray free electron laser light source that can image single large macromolecules and measure in real-time changes in the chemical bond as chemical and biological reactions take place. Our premier tools of science at the 10 national laboratories managed by the Office of Science are used by over 19,000 researchers and students from universities, other Federal agencies, and private industry every year, and have enabled U.S. researchers to make some of the most important scientific discoveries of the past 70 years.

Office of Science leadership in basic research in the physical sciences, and stewardship of large research facilities, is directly linked to its role in training America's scientists, engineers, and teachers. Through the funding of a diverse portfolio of research at more than 300 colleges and universities nationwide, we provide direct support and access to research facilities for thousands of university students and researchers in the physical and biological sciences and mathematics. Facilities at the national laboratories provide unique opportunities for researchers and their students from across the country to pursue questions at the intersection of physics, chemistry, biology, computing, and materials science. The Office of Science also sponsors undergraduate student internships and fellowships for science and mathematics K–12 teachers for research experience and training at the national laboratories.

The fiscal year 2007 budget request will allow the Office of Science to increase support for high-priority DOE mission-driven scientific research as well as support new initiatives; maintain optimum operations at our scientific user facilities; keep major facility construction projects on schedule and within budget; and treble educational, research, and training opportunities for the next generation of scientists, engineers, and teachers. The budget will also allow us to expand our contribution to basic research in support of the President's Hydrogen Fuel Initiative and the President's new Advanced Energy Initiative. Roughly half of our budget goes to construction and operations of the large scientific facilities, and the other half is approximately equally split between research at the DOE laboratories and research at universities. This budget will support the research of approximately 24,200 faculty, students, and postdoctoral researchers throughout the Nation, an increase of 2,600 from fiscal year 2006.

The following programs are supported in the fiscal year 2007 budget request: Basic Energy Sciences, Advanced Scientific Computing Research, Biological and Environmental Research, Fusion Energy Sciences, High Energy Physics, Nuclear Physics, Science Laboratories Infrastructure, Science Program Direction, Workforce Development for Teachers and Scientists, and Safeguards and Security.

OFFICE OF SCIENCE FISCAL YEAR 2007 PRESIDENT'S REQUEST SUMMARY BY PROGRAM

[In thousands of dollars]

	Fiscal Year 2005 Appropriation	Fiscal Year 2006 Appropriation	Fiscal Year 2007 Request
Science:			
Basic Energy Sciences	1,083,616	1,134,557	1,420,980
Advanced Scientific Computing Research	226,180	234,684	318,654
Biological and Environmental Research:			
Base program	487,474	451,131	510,263
Congressionally directed projects	79,123	128,700	.....
Total, Biological and Environmental Research	566,597	579,831	510,263
High Energy Physics	722,906	716,694	775,099
Nuclear Physics	394,549	367,034	454,060
Fusion Energy Sciences	266,947	287,644	318,950
Science Laboratories Infrastructure	37,498	41,684	50,888
Workforce Development for Teachers and Scientists	7,599	7,120	10,952
Science Program Direction	154,031	159,118	170,877
Safeguards and Security	67,168	68,025	70,987
Small Business Innovation Research/Small Business Technology Transfer	113,621	.....	.....
Subtotal, Science	3,640,712	3,596,391	4,101,710
Less use of prior year balances	−5,062	.....	.....

OFFICE OF SCIENCE FISCAL YEAR 2007 PRESIDENT'S REQUEST SUMMARY BY PROGRAM—Continued

[In thousands of dollars]

	Fiscal Year 2005 Appropriation	Fiscal Year 2006 Appropriation	Fiscal Year 2007 Request
Total, Science	3,635,650	3,596,391	4,101,710

FISCAL YEAR 2007 SCIENCE PRIORITIES

In his State of the Union Message on January 31, 2006, President George W. Bush stated,

"To keep America competitive, one commitment is necessary above all: We must continue to lead the world in human talent and creativity. Our greatest advantage in the world has always been our educated, hardworking, ambitious people—and we're going to keep that edge. Tonight I announce an American Competitiveness Initiative, to encourage innovation throughout our economy, and to give our Nation's children a firm grounding in math and science.

"First, I propose to double the Federal commitment to the most critical basic research programs in the physical sciences over the next 10 years. This funding will support the work of America's most creative minds as they explore promising areas such as nanotechnology, supercomputing, and alternative energy sources."

I believe the American Competitiveness Initiative and this commitment by the President present an historic opportunity for science in our country and continued U.S. global competitiveness. Through the fiscal year 2007 budget, the Office of Science will build on our record of results with new investments to maintain U.S. world-leadership status in the physical sciences, keep U.S. research and development at the forefront of global science, and increase America's talent pool in science, technology, engineering, and mathematics.

Determining science and technology priorities across the Office of Science programs is an ongoing process, both in times of budget stringency and budget increases. Several factors are considered in our prioritization, including scientific opportunities identified by our scientific advisory committees and the overall scientific community; DOE mission needs; and administration and Departmental priorities. In fiscal year 2007, we will support the priorities in scientific research, facility operations, and construction and laboratory infrastructure established in the past few years and outlined in the Office of Science Strategic Plan and 20-year Facilities Outlook, in addition to Presidential and Departmental initiatives.

The President's Hydrogen Fuel Initiative and the new Advanced Energy Initiative will be supported through our contributions to basic research in hydrogen, fusion, solar energy to transportation fuels, chemical separation and materials for advanced nuclear energy systems, and production of ethanol from cellulose. We will also continue strong support for other administration priorities such as nanotechnology, advanced scientific computation, and climate change science and technology.

The Office of Science will actively lead and support the U.S. contributions to ITER, the international project to build and operate the first fusion science facility capable of producing a sustained, burning plasma to generate energy on a massive scale without environmental insult.

Full operations at four of the DOE Nanoscale Science Research Centers (NSRCs) and completion of construction and start-up operations for the fifth NSRC will be supported in fiscal year 2007. These facilities are the Nation's premier nanoscience user centers, providing resources unmatched anywhere in the world for the synthesis, fabrication, and analysis of nanoparticles and nanomaterials.

We will fully fund the programs in advanced scientific computing including support for: increasing capacity to 100–150 teraflops (trillions of operations per second) for high-performance production computing at the National Energy Research Scientific Computing Center (NERSC); 250 teraflop capability for modeling and simulation of scientific problems in combustion, fusion, and complex chemical reactions at Oak Ridge National Laboratory's Leadership Computing Facility; and installation of a 100 teraflop peak capacity IBM Blue Gene P system at Argonne National Laboratory's Leadership Computing Facility to extend architectural diversity in leadership computing and address challenges in catalysis, protein/DNA complexes, and materials sciences related to next-generation design of nuclear reactors.

The Office of Science designs, constructs, and operates facilities and instruments that give U.S. scientists an "order of magnitude" lead over foreign competition in key scientific fields. For example, increasing the computing capacity at NERSC and

the Leadership Computing Facilities will give the United States computational capabilities for open scientific research that are at least 10 times greater than available anywhere else. The Linac Coherent Light Source (LCLS) at the Stanford Linear Accelerator Center, when it comes on line in 2009, will produce X-rays 10 billion times, or 10 orders of magnitude more intense than any existing X-ray source in the world, and allow structural studies on individual nanoscale particles and single biomolecules. The Spallation Neutron Source (SNS), the world's forefront neutron scattering facility, will increase the number of neutrons available for cutting-edge research by a factor of 10 over any existing Spallation neutron source in the world when operations begin this year. We will be supporting the first full year of SNS operations in fiscal year 2007 as well as the fabrication of four to five instruments that are part of the initial suite of instruments for the target station.

In fiscal year 2007, we will begin R&D and project engineering and design for the next generation of synchrotron light sources. The National Synchrotron Light Source-II (NSLS–II) will deliver orders of magnitude improvement in spatial resolution, providing the world's finest capabilities for X-ray imaging and enabling the study of material properties and functions, particularly at the nanoscale, at a level of detail and precision never before possible. Its energy resolution will explore dynamical properties of matter as no other light source has ever accomplished.

Our research programs in nuclear physics continue to receive strong support. We will continue optimum operations at the Relativistic Heavy Ion Collider (RHIC), and support additional instrumentation projects for RHIC for studying the properties of hot, dense nuclear matter, providing insight into the early universe. We will also support increased operations at the Continuous Electron Beam Accelerator Facility (CEBAF) and project engineering and design for doubling the energy of the existing beam at CEBAF to 12 gigaelectron volts. It will image directly individual quarks and gluons in the nucleus, something never before accomplished.

In addition to supporting core experimental and theoretical high-energy physics research, we will double the resources for R&D for the proposed high-energy, high luminosity electron-positron International Linear Collider. And we will maintain strong support for U.S. participation in the research program at the Large Hadron Collider, scheduled to begin operations in 2007.

The Office of Science will expand the Genomics: GTL program—a program that builds on the advances in genome sequencing, molecular science, and computation, to understand and ultimately harness the functions of microbes to address DOE's mission needs.

We will also continue to support the development of leaders in the science and mathematics education community through a tripling of the number of K–12 teachers participating in the Laboratory Science Teacher Professional Development program, focusing on middle school teachers and students. This immersion program, working with master teachers and laboratory mentor scientists, builds content knowledge, research skills, and a lasting connection to the scientific community, leading to more effective teaching that inspires students in science and mathematics.

SCIENCE ACCOMPLISHMENTS

Over the past 50 years, the Office of Science has blended cutting-edge research and innovative problem solving to keep the United States at the forefront of scientific discovery. American taxpayers have received great value for their investment in basic research sponsored by the Office of Science that has led to significant technological innovations, new intellectual capital, enhanced economic competitiveness, and improved quality of life. The following are some of the past year's highlights:

Promoting the Contributions of Physics to Our Quality of Life—2005 World Year of Physics.—The Office of Science, in coordination with researchers at universities nationwide and the DOE national laboratories, celebrated the 2005 World Year of Physics through a year-long program of activities and materials highlighting how physics enables advances in science and contributes to the quality of life. In celebration of the centennial of Albert Einstein's "miracle year", 1905, when he published four papers that laid the foundations of much of physics as we know it today, the Office of Science co-sponsored a new PBS NOVA program, "Einstein's Big Idea", and its associated educational materials. The program aired on PBS stations nationwide in October 2005. Library guides about the program were distributed to all 16,000 libraries nationwide, and teacher's guides were sent nationwide to 15,000 high school physics teachers, 3,700 middle school physics teachers, and 400 middle school science chairs. Several of the national laboratories held special lectures, symposia, and education events for local middle school and high school students and the surrounding communities. A DOE/Office of Science website was created to educate the

public about the significance of Einstein's revolutionary work, describe the role of physics in various science and technology fields, publicize events, and highlight the work of DOE-sponsored physicists. The "DOE Physicists at Work" website continues to profile the work of young physicists conducting research in the universities and national laboratories funded by the Office of Science. Several activities coordinated by the American Physical Society were also co-sponsored by the Office of Science including Physics Quest, an outreach event held on the grounds of the Institute for Advanced Studies in Princeton, NJ, that took over 100,000 middle school students through a series of experiments on a hunt to finding Einstein's "missing treasure", and Physics on the Road, a project that supported the materials and equipment for teams from colleges and universities to perform physics demonstrations at schools and public venues.

Nobel Prize in Chemistry.—The 2005 Nobel prize in chemistry was awarded to Robert H. Grubbs (CalTech), Richard R. Schrock (MIT), and Yves Chauvin (French Petroleum Institute) for the development of the "metathesis method" in organic synthesis. This method of selectively stripping out certain atoms in a compound and replacing them with atoms that were previously part of another compound employs novel catalysts to simplify the process of custom-building molecules with specialized properties. Metathesis has led to industrial and pharmaceutical methods that are more efficient, produce fewer by-products, and are more environmentally friendly. The work of the laureates has major significance in the production of fuels, synthetic fibers, plastics, and pharmaceuticals. The Office of Science has supported Dr. Schrock's work in catalytic chemistry at the Massachusetts Institute of Technology since 1979 and supported Dr. Grubbs' work in homogeneous catalysis at Caltech from 1979 through 1988.

Discoveries and Capabilities at the Frontier of Nanoscale Science.—In 2005, the world's first hard X-ray nanoprobe beamline was activated at the Advanced Photon Source (Argonne). The X-ray microscope nanoprobe will provide spatial resolution of 30 nanometers or better, making it a valuable tool for studying nanomaterials as the new Center for Nanoscale Materials begins operations in 2006 at Argonne National Laboratory. Researchers at the Stanford Synchrotron Radiation Laboratory have developed new methods for studying the structure of nanomaterials through a combined use of X-ray scattering and absorption measurement techniques that has led to significant advances in understanding the structures of nanomaterials and routine characterization of bacterial nano-minerals. Scientific discoveries at the nanoscale in 2005 include the following: ultrathin films, six atoms thick, that retained ferroelectric properties needed for next generation nanoscale devices such as electronics and sensors; ultrafast laser techniques observed the fastest reversible phase transition between nanocrystal structures ever recorded with the transition of vanadium oxide crystals switching from a semiconducting to metallic phase material; the fabrication of novel semiconductor nanocrystal polymer solar cells that demonstrated surprisingly high efficiencies; and the development of the world's smallest synthetic nanomotor—a 300 nanometer gold rotor on a carbon nanotube shaft—demonstrating advances in the miniaturization of electromagnetic devices.

Delivering Forefront Computational and Networking Capabilities for Science.—Several computational sciences and networking advances made in 2005 enable more effective use of leadership-scale computing resources and management of the growing data volumes from the scientific user facilities: computer science researchers have significantly enhanced the performance of simulation models for fusion, atmospheric science, and quantum chemistry applications and continue to improve programming models that optimize complex scientific applications run on computers with hundreds to thousands of processors; researchers at Argonne National Laboratory have produced a new modeling and solution paradigm for the design of efficient electricity markets; the Energy Sciences Network completed the first metropolitan area network connecting six DOE sites in the San Francisco Bay Area with dual connectivity at 20 gigabits per second, 10 to 50 times the previous bandwidth at each site, also improving reliability and lowering costs; and the UltraScienceNet Testbed completed deployment in August 2005 of its 20 gigabit per second reconfigurable optical network testbed designed to test advanced optical network technologies such as advanced data transfer networking technologies designed to meet the increasing demand for bandwidth and the needs of next-generation scientific instruments.

Advances in Biotechnology for Energy and the Environment.—Progress towards understanding how living organisms interact with and respond to their environment, and how those processes involved can be utilized, was gained through the following accomplishments: researchers applied both genomic and proteomic approaches to characterize a naturally occurring microbial community for the first time at a remediation site, producing insights into potential biotechnology strategies

for remediation of toxic materials; advanced genomic sequencing technologies applied to samples taken from the Sargasso Sea led to the discovery of over a million new genes that had never been seen before, identifying the potential of environmental genomics for discovering new microbe functionalities that can be harnessed for energy or environmental applications; researchers have developed the ability to insert fiber-optic probes into living cells to watch cellular processes unfold in real time; and a new clearinghouse was established that contains approximately 300 draft or completed genome sequences of microbes, associated information about the gene, protein functions, and biochemical pathways, and browsing tools to help researchers sort through and analyze genomic data.

Accomplishments in Theory, Simulation, and Experiments Energize Fusion Research Towards ITER.—With progress on the international agreement to build ITER, investigations on the theory, simulation, and experimentation related to burning plasma and ITER related issues increased in 2005. The results of some of those studies include the following: researchers achieved ITER level plasma pressure at the Alcator C-Mod facility, a world record absolute pressure for magnetic confinement experiments; separate experiments on DIII–D indicated higher plasma pressures can be obtained without a penalty to energy confinement, suggesting that ITER could achieve higher fusion power output than originally conceived; multi-teraflop performance was achieved on a leading plasma micro-turbulence simulation code, demonstrating the ability of the code to effectively utilize increased computational capabilities and accelerate the pace of discoveries in this area of fusion plasma research; and high-performance reduced-activation steels tested under fusion-relevant conditions demonstrated superior performance under intense neutron radiation compared to conventional steels, making these materials lead candidates for structural components of ITER.

PROGRAM OBJECTIVES AND PERFORMANCE

The path from basic research to industrial competitiveness is not always obvious. History has taught us that seeking answers to fundamental questions results in a diverse array of practical applications as well as some remarkable revolutionary advances. Working with the scientific community, the Office of Science invests in the most promising research and sets definite and challenging long-term scientific goals with meaningful annual targets. The intent and impact of our performance goals may not always be clear to those outside the research community. Therefore the Office of Science has created a website (www.sc.doe.gov/measures) to better communicate what we are measuring and why it is important. This website also tracks progress toward management improvements and describes a wide array of program accomplishments.

ORGANIZATION

The OneSC Project was initiated to streamline the Office of Science structure and improve operations across the Office of Science complex in keeping with the principles of the President's Management Agenda to manage government programs more efficiently and effectively. The Office of Science has been officially reorganized under the OneSC structure (Figure 2). Phase 1 of the reorganization was effective March 20, 2005. Phase 2 of OneSC involves human capital and organizational needs analyses and reengineering of SC business and management operations and processes. The Office of Science business practices and processes will be optimized to remove unnecessary work and support enhanced stewardship and oversight of the Office of Science laboratories. Attrition, retraining, reassignments, and workforce management incentives will be utilized to manage changes in staffing levels or skill mix needs resulting from Phase 2 activities. No downgrades, involuntary geographical transfers, separations, or reductions-in-force are planned or expected.

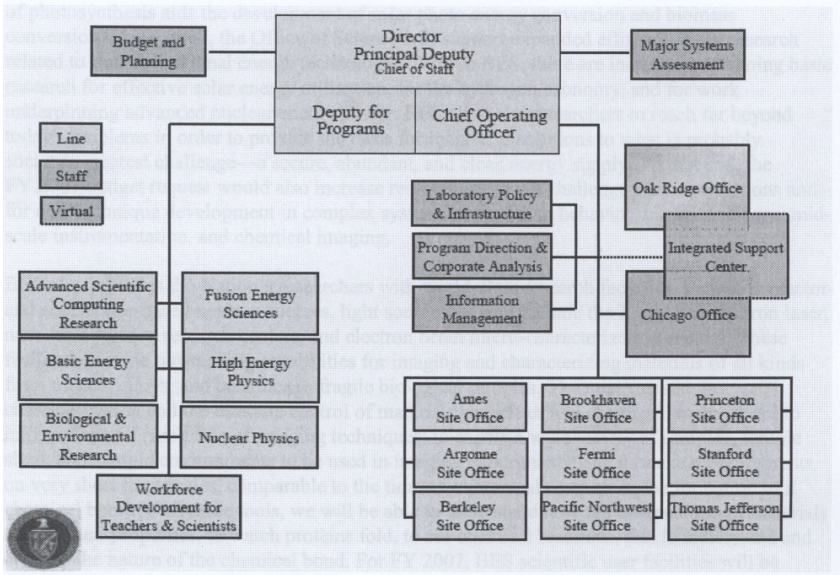

Figure 2

SCIENCE PROGRAMS

Basic Energy Sciences

Fiscal Year 2006 Appropriation—$1,134.6 Million; Fiscal Year 2007 Request—$1,421.0 Million

Basic research supported by the Basic Energy Sciences (BES) program touches virtually every aspect of energy resources, production, conversion, efficiency, and waste mitigation. Research in materials sciences and engineering leads to the development of materials that improve the efficiency, economy, environmental acceptability, and safety of energy generation, conversion, transmission, and use. Research in chemistry leads to the development of advances such as efficient combustion systems with reduced emissions of pollutants; new solar photo conversion processes; improved catalysts for the production of fuels and chemicals; and better separations and analytical methods for applications in energy processes, environmental remediation, and waste management. Research in geosciences contributes to the solution of problems in multiple DOE mission areas, including reactive fluid flow studies to understand contaminant remediation and seismic imaging for reservoir definition. Research in the molecular and biochemical nature of photosynthesis aids the development of solar photo energy conversion and biomass conversion. In fiscal year 2007, the Office of Science will support expanded efforts in basic research related to transformational energy technologies. Within BES, there are increases to ongoing basic research for effective solar energy utilization, for the hydrogen economy, and for work underpinning advanced nuclear energy power. BES also asks researchers to reach far beyond today's problems in order to provide the basis for long-term solutions to what is probably society's greatest challenge—a secure, abundant, and clean energy supply. To that end, the fiscal year 2007 budget request would also increase research for grand challenge science questions and for new technique development in complex systems or emergent behavior, ultrafast science, mid-scale instrumentation, and chemical imaging.

BES also provides the Nation's researchers with world-class research facilities, including reactor- and accelerator-based neutron sources, light sources soon to include the X-ray free electron laser, nanoscale science research centers, and electron beam micro-characterization centers. These facilities provide outstanding capabilities for imaging and characterizing materials of all kinds from metals, alloys, and ceramics to fragile biological samples. The next steps in the characterization and the ultimate control of materials properties and chemical reactivity are to improve spatial resolution of imaging techniques; to enable a wide variety of samples, sample sizes, and

sample environments to be used in imaging experiments; and to make measurements on very short time scales, comparable to the time of a chemical reaction or the formation of a chemical bond. With these tools, we will be able to understand how the composition of materials affects their properties, to watch proteins fold, to see chemical reactions, and to understand and observe the nature of the chemical bond. For fiscal year 2007, BES scientific user facilities will be scheduled to operate at an optimal number of hours.

Construction of the Spallation Neutron Source (SNS) will be completed during the 3rd quarter of fiscal year 2006 and will join the suite of BES scientific user facilities. In fiscal year 2007, BES will support continued fabrication and commissioning of SNS instruments, funded both as part of the SNS project and from other sources including non-DOE sources, and will increase power to full levels. A new Major Item of Equipment is funded in fiscal year 2007 that will allow the fabrication of approximately four to five additional instruments for the SNS, thus nearly completing the initial suite of 24 instruments that can be accommodated in the high-power target station.

Four Nanoscale Science Research Centers will be fully operational in fiscal year 2007: the Center for Nanophase Materials Sciences at Oak Ridge National Laboratory, the Molecular Foundry at Lawrence Berkeley National Laboratory, the Center for Nanoscale Materials at Argonne National Laboratory, and the Center for Integrated Nanotechnologies at Sandia National Laboratories and Los Alamos National Laboratory. A fifth Center, the Center for Functional Nanomaterials at Brookhaven National Laboratory, will receive final year construction funding. In fiscal year 2007, there are significant shifts in the nanoscale science and engineering research activities contributing to the BES investments in research at the nanoscale and a substantial overall increase in funding. Overall, the total investment for these Nanoscale Science Research Centers decreases by about 10 percent owing to the planned decrease in construction funding. Funding for research at the nanoscale increases very significantly owing to increases in funding for activities related to the hydrogen economy, solar energy conversion, and advanced nuclear energy.

The Linac Coherent Light Source (LCLS) at the Stanford Linear Accelerator Center (SLAC) will continue Project Engineering Design (PED) and construction at the planned levels. The purpose of the LCLS Project is to provide laser-like radiation in the X-ray region of the spectrum that is 10 billion times greater in peak power and peak brightness than any existing coherent X-ray light source and that has pulse lengths measured in femtoseconds—the timescale of electronic and atomic motions. The LCLS will the first facility in the world for such groundbreaking research in the physical and life sciences. Support is also provided for PED and R&D for the National Synchrotron Light Source-II (NSLS–II), which will be a new synchrotron light source, highly optimized to deliver ultra-high brightness and flux and exceptional beam stability. This would enable the study of material properties and functions with a spatial resolution of 1 nanometer (nm), an energy resolution of 0.1 millielectron volt (meV), and the ultra-high sensitivity required to perform spectroscopy on a single atom. NSLS–II will be transformational in opening new regimes of scientific discovery and investigation. The ability to probe materials with 1 nm or better spatial resolution and to analyze their dynamics with 0.1 meV energy resolution will be truly revolutionary.

The Scientific Discovery through Advanced Computing (SciDAC) program is a set of coordinated investments across all Office of Science mission areas with the goal of achieving breakthrough scientific advances via computer simulation that were impossible using theoretical or laboratory studies alone. The SciDAC program in BES consists of two major activities: (1) characterizing chemically reacting flows as exemplified by combustion and (2) achieving scalability in the first-principles calculation of molecular properties, including chemical reaction rates.

Advanced Scientific Computing Research

Fiscal Year 2006 Appropriation—$234.7 Million; Fiscal Year 2007 Request—$318.6 Million

The Advanced Scientific Computing Research (ASCR) program is expanding the capability of world-class scientific research capacity through advances in mathematics, high performance computing and advanced networks, and through the application of computers capable of many trillions of operations per second (terascale computers) to advanced scientific applications. Computer-based simulation enables us to understand and predict the behavior of complex systems that are beyond the reach of our most powerful experimental probes or our most sophisticated theories. Computational modeling has greatly advanced our understanding of fundamental processes of Nature, such as fluid flow and turbulence or molecular structure and reactivity. Soon, through modeling and simulation, we will be able to explore the

interior of stars to understand how the chemical elements were created and learn how protein machines work inside living cells to enable the design of microbes that address critical energy or waste cleanup needs. We could also design novel catalysts and high-efficiency engines that expand our economy, lower pollution, and reduce our dependence on foreign oil. Computational science is increasingly important to progress at the frontiers of almost every scientific discipline and to our most challenging feats of engineering. The science of the future demands that we advance beyond our current computational abilities.

For the past two decades SC, and the worldwide scientific community, have been harvesting their success in building and developing the Internet. This has enabled roughly a doubling in bandwidth every 2 years with no increase in cost. However, the demands of today's facilities, which generate millions of gigabytes per year of data, now outstrip the capabilities of the Internet design and the algorithms, software tools, libraries, and environments needed to accelerate scientific discovery through modeling and simulation are beyond the realm of commercial interest. However, the evolution of the telecom market, including the availability of direct access to optical fiber at attractive prices and the availability of flexible dense wave division multiplexing (DWDM) products gives SC the possibility of exploiting these technologies to provide scientific data where it is needed at speeds commensurate with the new data volumes. However, to take advantage of this opportunity significant research is needed to integrate these capabilities, make them available to scientists, and build the infrastructure which can provide cybersecurity in this environment.

The Mathematical, Information, and Computational Sciences (MICS) effort supports the core research of the ASCR program. To establish and maintain networking, modeling and simulation leadership in scientific areas that are important to DOE's mission, the MICS subprogram employs a broad, but integrated, research strategy. The MICS subprogram's basic research portfolio in applied mathematics and computer science provides the foundation for enabling research activities, which include efforts to advance networking and to develop software tools, libraries, and environments. Results from enabling research supported by the MICS subprogram are used by computational scientists supported by other SC and DOE programs. This link to other DOE programs provides a tangible assessment of the value of the MICS subprogram for advancing scientific discovery and technology development through simulations. In addition to its research activities, the MICS subprogram plans, develops, and operates supercomputer and network facilities that are available—24 hours a day, 365 days a year—to researchers working on problems relevant to DOE's scientific missions. In fiscal year 2007, the Energy Science Network (ESnet) will deliver a backbone network with two to four times the capability of today's network, to support the science mission of the Department. In addition, the National Energy Research Scientific Computing Center (NERSC) will be upgraded in fiscal year 2006 to add a NERSC–5 machine with 100–150 teraflops of peak computing capacity early in fiscal year 2007. The NERSC computational resources are integrated by a common high performance file storage system that enables users to easily use all machines. Therefore the new machine will significantly reduce the current oversubscription at NERSC which serves nearly 2,000 scientists annually.

The Oak Ridge National Laboratory (ORNL) Leadership Computing Facility (LCF), selected under the Leadership Computing Competition in fiscal year 2004, will be enhanced to deliver 250 teraflops of peak capability in fiscal year 2007 for scientific applications. In addition, further diversity with the LCF resources will be realized with an acquisition by Argonne National Laboratory (ANL) of a high performance IBM Blue Gene P with low-electrical power requirements and a peak capability of up to 100 teraflops. The expansion of the Leadership Computing Facility to include the Blue Gene computer at ANL was an important element of the joint ORNL, ANL, and PNNL proposal selected in 2004 to enable solutions for scientific problems beyond what would be attainable through a continued simple extrapolation of current computational capabilities. The capability provided in fiscal year 2007 will accelerate scientific understanding in many areas of science important to DOE including materials science, biology, and advanced designs of nuclear reactors.

The research focus of ASCR SciDAC activities includes Integrated Software Infrastructure Centers (ISICs). ISICs are partnerships between DOE national laboratories and universities focused on research, development, and deployment of software to accelerate the development of SciDAC application codes. Progress to date includes significant improvements in performance modeling and analysis capabilities that have led to doubling the performance on 64 processors of the Community Atmosphere Model component of the SciDAC climate modeling activity. In fiscal year 2006, ASCR is recompeting its SciDAC portfolio, with the exception of activities in partnership with the Office of Fusion Energy that were initiated in fiscal year 2005. In addition, in fiscal year 2007 ASCR will continue the competitively selected

SciDAC institutes which can become centers of excellence in high end computational science in areas that are critical to DOE missions.

Advancing high performance computing and computation is a highly coordinated interagency effort. ASCR has extensive partnerships with other Federal agencies and the National Nuclear Security Administration (NNSA). The activities funded by the MICS subprogram are coordinated with other Federal efforts through the NITR&D subcommittee of the National Science and Technology Council and its Technology Committee. The subcommittee coordinates planning, budgeting, and assessment activities of the multiagency NITR&D enterprise. DOE has been an active participant in these coordination groups and committees since their inception. The MICS subprogram will continue to coordinate its activities through these mechanisms and will lead the development of new coordinating mechanisms as needs arise. The DOE program solves mission critical problems in scientific computing. In addition, results from the DOE program benefit the Nation's information technology basic research effort. The fiscal year 2007 program positions DOE to make additional contributions to this effort.

Biological and Environmental Research

Fiscal Year 2006 Appropriation—$451.1 Million[1]; Fiscal Year 2007 Request—$510.3 Million

Biological and Environmental Research (BER) supports basic research with broad impacts on our health, our environment, and our energy future. Biotechnology solutions are possible for DOE energy and environmental challenges by understanding complex biological systems and developing computational tools to model and predict their behavior. An ability to predict long-range and regional climate enables effective planning for future needs in energy, agriculture, and land and water use. Understanding the global carbon cycle and the associated role and capabilities of microbes and plants can lead to solutions for reducing carbon dioxide concentrations in the atmosphere. Understanding the complex role of biology, geochemistry, and hydrology beneath the Earth's surface will lead to improved decision making and solutions for contaminated DOE weapons sites. Both normal and abnormal health—from normal human development to cancer to brain function—can be understood and improved using radiotracers, advanced imaging instruments, and novel biomedical devices. Understanding the biological effects of low doses of radiation can lead to the development of science-based health risk policy to better protect workers and citizens.

The fiscal year 2007 budget includes funds for the continued expansion of the Genomics: GTL program—a program at the forefront of the biological revolution. This program employs a systems approach to biology at the interface of the biological, physical, and computational sciences to address DOE's mission needs. This research will continue to more fully characterize the inventory of multi-protein molecular machines found in selected DOE-relevant microbes and higher organisms. It will determine the diverse biochemical capabilities of microbes and microbial communities, especially as they relate to potential biological solutions to DOE needs, found in populations of microbes isolated from DOE-relevant sites. Within the Genomics: GTL program, BER will develop the understanding needed to advance biotechnology-based strategies for biofuel production, focusing on biohydrogen and bioethanol.

Ethanol produced from corn starch is currently the most widely consumed biofuel in the United States. The production of cellulosic ethanol from biomass has the potential to reduce current oil demand by one-third without reducing the food supply or damaging the environment. Currently, a biochemical conversion of biomass to ethanol involves three basic steps: (1) breakdown of raw biomass using heat and chemicals, (2) use of enzymes to breakdown plant cell wall materials into simple sugars, and (3) conversion of the sugars into ethanol using microbes. The long-term goal is to integrate the bioprocessing into a single step. Accomplishing this requires the development of genetically modified, multifunctional microbes or a stable mixed culture of microbes capable of carrying out all biologically mediated transformations needed for the complete conversion of biomass to ethanol. Research will be supported on a variety of enzymes and microbes that contribute (individually and together) to the conversion of cellulose to ethanol; analysis of enzymes to understand how they interact with and breakdown cellulose; a determination of the factors, such as temperature and different combinations of sugars, that influence biomass degradation or ethanol production; strategies for producing and maintaining stable mixed cultures of microbes; and improved capabilities for genetically engineering

[1] Does not include $128.7 Million in Congressionally-directed projects.

microbes that produce bioethanol. This research will lead to increased understanding of microbe-based production of cellulosic ethanol, increased production efficiencies, and reduced costs that will make cellulosic ethanol a cost competitive alternative to gasoline in the coming decades.

Under certain conditions, green algae and a type of bacteria known as cyanobacteria can use energy from the sun to split water and generate hydrogen. This process, known as biophotolysis, has the potential to produce hydrogen on the scale necessary for meeting future energy demand. It also uses water as a source of hydrogen—a clean, renewable, carbon-free (i.e., non-fossil fuel based), substrate available in virtually inexhaustible quantities and is potentially the most efficient conversion of solar energy to hydrogen. Theoretically, the maximum energetic efficiency for direct biophotolysis is 40 percent compared with a maximum of about 1 percent for hydrogen production from biomass (Critical Reviews in Microbiology 31, 19–31, 2005). Research will include investigations on a range of hydrogen-producing enzymes and organisms, understanding how hydrogenase (the enzyme that cleaves water to produce hydrogen) work, the inhibition of hydrogenase activity by oxygen, and genetic regulatory and biochemical processes that influence hydrogen production. This new knowledge will be used to engineer microbes to use in hydrogen bioreactors or enzyme-catalysts to use in bioinspired nanostructures for hydrogen production.

In 2003, the administration launched the Climate Change Research Initiative (CCRI) to focus research on areas where substantial progress in understanding and predicting climate change, including its causes and consequences, is possible over the next 5 years. In fiscal year 2007, BER will contribute to the CCRI from four programs: Terrestrial Carbon Processes, Climate Change Prediction, ARM, and Integrated Assessment. Activities will be focused on (1) helping to resolve the North American carbon sink question (i.e., the magnitude and location of the North American carbon sink); (2) deployment and operation of a mobile ARM Cloud and Radiation Testbed facility to provide data on the effects of clouds and aerosols on the atmospheric radiation budget in regions and locations of opportunity where data is lacking or sparse; (3) using advanced climate models to simulate potential effects of natural and human-induced climate forcing on global and regional climate and the potential effects on climate of alternative options for mitigating increases in human forcing of climate; and (4) developing and evaluating assessment tools needed to study costs and benefits of potential strategies for reducing net carbon dioxide emissions.

In fiscal year 2007, BER SciDAC-enabled activities will allow climate scientists to gain unprecedented insights into potential effects of energy production and use on the global climate system. BER will also add a SciDAC component to GTL and Environmental Remediation research. GTL SciDAC will initiate new research to develop mathematical and computational tools needed for complex biological system modeling and for analysis of complex data sets, such as mass spectrometry data. Environmental Remediation SciDAC will provide an opportunity for subsurface and computational scientists to develop and improve methods of simulating subsurface reactive transport processes on "leadership class" computers.

Research emphasis within BER's Environmental Remediation Sciences subprogram will be focused on issues of subsurface cleanup such as defining and understanding the processes that control contaminant fate and transport in the environment and providing opportunities for use, or manipulation of natural processes to alter contaminant mobility. The resulting knowledge and technology will assist DOE's environmental clean-up and stewardship missions. Funding for experimental equipment recapitalization at the William R. Wiley Environmental Molecular Sciences Laboratory (EMSL) at Pacific Northwest National Laboratory (PNNL) will be increased in fiscal year 2007.

BER will also continue in fiscal year 2007 to support fundamental research in genomics, medical applications and measurement science, and the health effects of low dose radiation. Resources are developed and made widely available for determining protein structures at DOE synchrotrons, for high-throughput genetic studies using mice, and for DOE-relevant high-throughput genomic DNA sequencing. Building on DOE capabilities in physics, chemistry, engineering, biology and computation, BER supports fundamental imaging research, maintains core infrastructure for imaging research, and develops new technologies to improve the diagnosis and treatment of psycho-neurological diseases and cancer and to improve the function of patients with neurological disabilities such as blindness.

High Energy Physics

Fiscal Year 2006 Appropriation—$716.7 Million; Fiscal Year 2007 Request—$775.1 Million

The High Energy Physics (HEP) program provides over 90 percent of the Federal support for the Nation's high energy physics research. This research advances our understanding of how the universe works at its most basic level, from the elementary constituents of matter to the recently discovered but still mysterious dark energy and dark matter that so dominate our universe. Our research aims to solve one of Nature's deepest paradoxes: why does the universe appear to be made of matter but not antimatter? How can the laws of the atom and those of cosmological gravity resolve themselves to Einstein's long-sought unified theory of matter and force? HEP provides research facilities and advances our knowledge, not only in high energy physics, but increasingly in other fields, including particle astrophysics and cosmology. Research advances in one field often have a strong impact on research directions in another. Technology that was developed in response to the demands of high energy physics research has also become indispensable to other fields of science and has found wide applications in industry and medicine, often in ways that could not have been predicted when the technology was first developed. Examples include medical imaging, radiation therapy for cancer using particle beams, ion implantation of layers in semiconductors, materials research with electron microscopy, and the World Wide Web. The accelerator technologies of high-power X-ray light sources, from synchrotron radiation facilities to the new coherent light sources, are all derived from high energy physics accelerator technology.

The U.S. HEP program in fiscal year 2007 will continue to lead the world with forefront user facilities at the Fermi National Accelerator Laboratory (Fermilab) and SLAC that help answer the key scientific questions outlined above, but these facilities are scheduled to complete their scientific missions by the end of the decade. Thus, the longer-term HEP program supported by this request begins to develop new world-leading facilities in targeted areas (for example, neutrino physics) that will establish a U.S. leadership role in these areas in the next decade. Further, HEP has prioritized current R&D efforts to select those which will provide the most compelling science opportunities in the coming decade within the available resources. For these reasons, the highest priority R&D effort is the development of the proposed International Linear Collider (ILC), and this request significantly advances the ILC R&D program. In making these decisions HEP has carefully considered the recommendations of the High Energy Physics Advisory Panel (HEPAP) and planning studies produced by the U.S. scientific community, including the National Academy of Sciences.

R&D in support of the ILC is doubled relative to fiscal year 2006 to support a U.S. leadership role in a comprehensive, coordinated international R&D program, and to provide a basis for U.S. industry to compete successfully for major subsystem contracts. The long-term goal of this effort is to support a decision on a construction start of an international electron-positron linear collider around the end of the decade. In fiscal year 2005 an international collaboration called the Global Design Effort (GDE) was organized to coordinate the R&D and design of a linear collider.

To provide a nearer-term future HEP program, and to preserve future research options, R&D for accelerator and detector technologies, particularly in the growing area of neutrino physics, will continue at an increased level relative to fiscal year 2006. With Tevatron improvements completed, much of the accelerator development effort at Fermilab in fiscal year 2007 will focus on the neutrino program to study the universe's most prolific particle. The Neutrinos at the Main Injector (NuMI) beam allows studies of the fundamental physics of neutrino masses and mixings using the proton source section of the Tevatron complex. NuMI has begun operations and will eventually put much higher demands on that set of accelerators. A program of enhanced maintenance, operational improvements, and equipment upgrades is being developed to meet these higher demands, while continuing to run the Tevatron. Engineering design will begin on a new detector optimized to detect electron neutrinos, the Electron Neutrino Appearance (EvA) Detector, which will utilize the NuMI beam. Participation will begin in a reactor-based neutrino experiment. Meanwhile, R&D will continue for a high-intensity neutrino super beam facility and a double beta decay experiment. These efforts are part of a coordinated neutrino program developed from an American Physical Society study and a joint HEPAP/Nuclear Sciences Advisory Committee (NSAC) subpanel review.

In order to exploit the unique opportunity to expand the boundaries of our understanding of the matter-antimatter asymmetry in the universe, a high priority is given to continued operations and infrastructure support for the B-factory at SLAC. Upgrades to the accelerator and detector are currently scheduled for completion in

2006, and our baseline plan is to have B-factory operations conclude in fiscal year 2008. We are also engaging with our advisory panels and international collaborating partners on the precise timetable for completion of B-Factory operations and follow-on data analyses.

As the Large Hadron Collider (LHC) accelerator nears its turn-on date in 2007, U.S. activities related to fabrication of detector components will be completed and new activities related to commissioning and pre-operations of these detectors, along with software and computing activities needed to analyze the data, will ramp-up significantly. A scientifically vigorous role for U.S. research groups in the LHC physics program will continue to be a high priority of the HEP program.

In order to explore the nature of dark energy, support for R&D on competitively-selected dark energy space-based mission concepts, including the Super Nova/Acceleration Probe (SNAP), will be significantly increased in fiscal year 2007. SNAP will be a mission concept proposed for a potential interagency sponsored experiment with NASA, the Joint Dark Energy Mission (JDEM). This joint mission will provide important new information about the nature of dark energy that will in turn lead to a better understanding of the birth, evolution, and ultimate fate of the universe. In fiscal year 2007, R&D will also be supported for ground facilities (in cooperation with NSF) and/or a variety of space-based facilities which could provide independent and complementary measurements of the nature of dark energy. Advice from the scientific community will be solicited to aid in selecting the particular concepts to be developed.

In fiscal year 2005, the HEP program completed the original SciDAC programs in the areas of accelerator modeling and design, theoretical physics, astrophysics, and applying grid technology. Each of these projects has made significant strides in forging new and diverse collaborations (both among different disciplines of physics and between physicists and computational scientists) that have enabled the development and use of new and improved software for large-scale simulations. To build on these successes, the HEP program will re-compete its SciDAC portfolio in fiscal year 2006 to obtain significant new insights through computational science into challenging problems that have the greatest impact in HEP mission areas.

Nuclear Physics

Fiscal Year 2006 Appropriation—$367.0 Million; Fiscal Year 2007 Request—$454.1 Million

The Nuclear Physics (NP) program is the major sponsor of fundamental nuclear physics research in the Nation, providing about 90 percent of Federal support. NP builds and operates world-leading scientific facilities and state-of-the-art instrumentation to study the evolution and structure of nuclear matter, from the smallest building blocks, quarks and gluons, to the stable elements in the Universe created by stars. Key aspects to these studies are understanding how the quarks and gluons combine to form the nucleons (proton and neutron), what are the properties and behavior of nuclear matter under extreme conditions of temperature and pressure, and what are the properties and reaction rates for atomic nuclei up to their limits of stability. Results and insight from these studies are relevant to understanding how the universe evolved in its earliest moments, how the chemical elements were formed, and how the properties of one of Nature's basic constituents, the neutrino, influences astrophysics phenomena such as supernovae. Nuclear physics also has had great impact on human life. Knowledge and techniques developed in pursuit of fundamental nuclear physics research are extensively utilized in our society today. The understanding of nuclear spin enabled the development of magnetic resonance imaging for medical use. Radioactive isotopes produced by accelerators and reactors are used for medical imaging, cancer therapy, and biochemical studies. Advances in cutting-edge instrumentation developed for nuclear physics experiments have relevance to technological needs in combating terrorism. The highly trained scientific and technical personnel in fundamental nuclear physics that are a product of the program are a valuable human resource for many applied fields.

The fiscal year 2007 budget request increases support for operations and research by ~21 percent compared to fiscal year 2006. At this funding level, overall operations of the four National User Facilities and research efforts at universities and laboratories are supported at near optimal levels. This will allow researchers to make effective progress towards the program's scientific goals and milestones. In fiscal year 2007 modest funding is provided for generic exotic beam R&D directed towards development of capabilities for forefront nuclear structure and astrophysics studies and to understand the origin of the elements from iron to uranium.

When the Universe was a millionth of a second old, nuclear matter is believed to have existed in its most extreme energy density form called the quark-gluon plasma. Experiments at the Relativistic Heavy Ion Collider's (RHIC) at Brookhaven Na-

tional Laboratory (BNL) are searching to find and characterize this new state. These efforts will continue in fiscal year 2007, with increased support. NP, together with the National Aeronautics and Space Administration (NASA), begins construction of a new Electron Beam Ion Source (EBIS) to provide RHIC with more cost-effective, reliable, and versatile operations. Research and development activities, including the development of an innovative electron beam cooling system for RHIC, are expected to demonstrate the feasibility of increasing the luminosity or collision rate of the circulating beams by a factor of 10. In addition to RHIC efforts, the High Energy Density Physics activities include NP contributions to enhance the heavy ion triggering and measurement capabilities of LHC experiments under construction and the accompanying research program at universities and laboratories. Experiments at the LHC would permit measurements of the earliest highest energy density stage in the formation and development of matter at different conditions than those created at RHIC. The interplay of the different research programs at the LHC and the ongoing RHIC program will allow a detailed tomography of the hot, dense matter as it evolves from the "perfect fluid" (a fluid with zero viscosity) discovered at RHIC.

Operations of the Continuous Electron Beam Accelerator Facility (CEBAF) at Thomas Jefferson National Accelerator Facility (TJNAF) in fiscal year 2007 will continue to advance our knowledge of the internal structure of protons and neutrons, particularly a unique property called "confinement" that binds together their fundamental constituents, particles called quarks and gluons. By providing precision experimental information concerning the quarks and gluons that form the protons and neutrons, the approximately 1,000 experimental researchers that use CEBAF, together with researchers in nuclear theory, seek to provide a quantitative description of nuclear matter in terms of the fundamental theory of the strong interaction, Quantum ChromoDynamics. In fiscal year 2007, the accelerator provides beams simultaneously to all three experimental halls and Project Engineering Design (PED) activities begin on the 12 GeV CEBAF Upgrade. This cost-effective upgrade would allow for a test of a proposed mechanism of "quark confinement"—one of the compelling unanswered puzzles of physics.

Efforts at the Argonne Tandem Linear Accelerator System (ATLAS) at ANL and the Holifield Radioactive Ion Beam Facility (HRIBF) at ORNL will be supported in fiscal year 2007 to focus on investigating new regions of nuclear structure, studying interactions in nuclear matter like those occurring in neutron stars, and determining the reactions that created the nuclei of the chemical elements inside stars and supernovae. The GRETINA gamma-ray tracking array, currently under fabrication, will revolutionize gamma ray detection technology and offers dramatically improved capabilities to study the structure of nuclei at ATLAS, HRIBF, and elsewhere. The Fundamental Neutron Physics Beamline (FNPB) under fabrication at the SNS will provide a world-class capability to study the neutron decay properties, leading to a refined characterization of the weak force. Investments are made to initiate the fabrication of a neutron Electric Dipole Moment experiment, to be sited at the FNPB, in the search for new physics beyond the Standard Model.

The Nuclear Physics program funds SciDAC programs in the areas of theoretical physics (National Computational Infrastructure for Lattice Gauge Theory), astrophysics (Shedding New Light on Exploding Stars: TeraScale Simulations of Neutrino-Driven Supernovae and their Nucleosynthesis), and grid technology (Particle Physics Data Grid Collaborative Pilot). In fiscal year 2006 proposal applications will be evaluated for new or renewal SciDAC grants.

The Low Energy subprogram and the Theory subprogram, through their activities at the Nuclear Data Center, will support increased basic research efforts relevant to advanced nuclear fuel cycle issues. These subprograms will support nuclear data efforts and selected experiments that will lead to improvements in nuclear reaction cross-sections needed to calculate with reduced uncertainties the transmutation behavior for proposed advanced fuel cycles.

Fusion Energy Sciences

Fiscal Year 2006 Appropriation—$287.7 Million; Fiscal Year 2007 Request—$318.9 Million

The Fusion Energy Sciences (FES) program advances the theoretical and experimental understanding of plasma and fusion science, including a close collaboration with international partners in identifying and exploring plasma and fusion physics issues through specialized facilities. The FES program supports research in: plasma science; magnetically confined plasmas; advances in tokamak design; innovative confinement options; nonneutral plasma physics and High Energy Density Physics (HEDP); and cutting edge technologies. FES also leads U.S. participation in ITER, an experiment to study and demonstrate the sustained burning of fusion fuel. This

international collaboration will provide an unparalleled scientific research opportunity with a goal of demonstrating the scientific and technical feasibility of fusion power. Fusion is the energy source that powers the sun and stars. Fusion power could play a key role in U.S. long-term energy plans and independence because it offers the potential for plentiful, safe and environmentally benign energy.

The site selection for the international ITER Project, Cadarache, France, in the European Union, was a major six-party decision on June 28, 2005, at a Ministerial-level meeting in Moscow, Russia. Negotiations continued throughout the Fall of 2005, which led to the ITER parties (a) approving and welcoming the designated Director General Nominee chosen to lead the ITER organization, (b) approving and welcoming India into the ITER negotiations as a full non-host ITER party, and (c) completing the text of the draft ITER Agreement. In accordance with the Energy Policy Act of 2005, and as determined during the Fall 2005 ITER negotiations, the ITER Agreement directly addresses the following EPAct requirements:

—(i) clearly defines the U.S. financial contribution to construction and operations (as well as deactivation and decommissioning), as well as any other project costs associated with the project,

—(ii) ensures that the share of high-technology components of ITER that are manufactured in the United States is at least proportionate to the U.S. financial contribution to ITER,

—(iii) ensures, by virtue of the in-kind contribution procurement approach, that the United States will not be financially responsible for cost overruns in components manufactured by other ITER parties,

—(iv) guarantees the United States full access to all data generated by ITER,

—(v) enables U.S. researchers to propose and carry out an equitable share of experiments on ITER,

—(vi) provides the United States with a role in all collective decision-making related to ITER, and

—(vii) describes and defines the process for discontinuing and decommissioning ITER and the U.S. role in that process.

The U.S. Contributions to ITER project is being managed by the U.S. ITER Project Office (USIPO), established as a Princeton Plasma Physics Laboratory (PPPL)/Oak Ridge National Laboratory (ORNL) partnership. The fiscal year 2007 request for the U.S. Contributions to ITER Major Item of Equipment (MIE) project maintains the overall Total Project Cost funding cap of $1,122,000,000. The U.S. effort will be consistent with the other ITER parties in the pace of starting the long lead procurements, in providing increased numbers of personnel to the ITER Organization, and in providing cash for common expenses. The profile is preliminary until the baseline scope, cost, and schedule for the MIE project are established, and the Director General Nominee and ITER Organization have achieved a standard mode of operation.

In support of ITER and U.S. Contributions to ITER, FES is placing increased emphasis on its national burning plasma program—a critical underpinning to the fusion science in ITER. FES plans to enhance burning plasma research efforts across the U.S. domestic fusion program, including: ITER R&D support both in physics and technology and exploring new modes of improved or extended ITER performance; developing safe and environmentally attractive technologies necessary for ITER; exploring fusion simulation efforts that examine the complex behavior of burning plasmas in tokamaks; carrying out experiments on our national FES facilities with diagnostics and plasma control that can be extrapolated to ITER; and integrating all that is learned into a forward-looking approach to future fusion applications.

The Energy Policy Act of 2005 Sec. 972(c)(5)(C) requires the Secretary of Energy to provide "a report describing how United States participation in the ITER will be funded without reducing funding for other programs in the Office of Science (including other fusion programs) . . . ". The Department's fiscal year 2007 budget provides for healthy increases for all programs within the Office of Science and supports the ITER request of $60,000,000 almost entirely from new funds in the Fusion Energy Sciences (FES) budget request.

The Director of the Office of Science has stated that the FES program in the Office of Science will reasonably bear at least some of the cost of building ITER from within its budget and that ITER will not unduly harm funding of other Office of Science research programs. The Department expects that the $1.122 billion ITER funding profile could have some effect on the overall allocation of funds, both within the FES program and within the Office of Science, in future budgets. This has been and will continue to be the standard practice for funding large, capital-intensive projects within DOE. Nevertheless, as demonstrated by this fiscal year 2007 request, the Office of Science can fund ITER while maintaining healthy funding for other research programs.

The research and facility operations funding for the three major facilities will increase from the fiscal year 2006 level. Operations at the largest facility, DIII–D, will increase from 7 weeks in fiscal year 2006 to 12 weeks in fiscal year 2007, while operations at C-Mod at MIT and NSTX at PPPL will each increase by 1 week over fiscal year 2006, to 15 and 12 weeks respectively. A new baseline was established in July 2005 for the National Compact Stellarator Experiment (NCSX), a joint PPPL/ORNL advanced stellarator experiment being built at PPPL. It results in a 14-month delay in the schedule with completion in July 2009 and a new TEC of $92,401,000. The fiscal year 2007 request supports the new baseline. Funding for the FES SciDAC program will increase in fiscal year 2007 to continue development of tools that facilitate international fusion collaborations and initiate development of an integrated software environment that can accommodate the wide range of space and time scales and the multiple phenomena that are encountered in simulations of fusion systems. Within SciDAC, the Fusion Simulation Project is a major initiative involving plasma physicists, applied mathematicians, and computer scientists to create a comprehensive set of models of fusion systems, combined with the algorithms required to implement the models and the computational infrastructure to enable them to work together.

Other changes include redirections in fusion theory, High Energy Density Physics, research in heavy ion beam science, plasma technology and materials research, and experimental plasma research. Congressionally-directed, non-defense research at the Atlas pulsed power facility is discontinued in fiscal year 2007.

Science Laboratories Infrastructure

Fiscal Year 2006 Appropriation—$41.7 Million; Fiscal Year 2007 Request—$50.9 Million

The mission of the Science Laboratories Infrastructure (SLI) program is to enable the conduct of DOE research missions at the Office of Science laboratories by funding line item construction projects to maintain the general purpose infrastructure and the clean up for reuse or removal of excess facilities. The program also supports Office of Science landlord responsibilities for the 24,000-acre Oak Ridge Reservation and provides Payments in Lieu of Taxes (PILT) to local communities around ANL-East, BNL, and ORNL.

In fiscal year 2007, SLI will initiate funding for four construction projects: the Seismic Safety Upgrade of Buildings, Phase I, at the Lawrence Berkeley National Laboratory (LBNL); the Modernization of Building 4500N, Wing 4, Phase I, at ORNL; the Building Electrical Services Upgrade, Phase II, at the ANL; and Renovate Science Lab, Phase I, at BNL. Funding for the PNNL Physical Sciences Facility is requested in the National Nuclear Security Administration's (NNSA's) Nuclear Non-Proliferation R&D program for fiscal year 2007. This project is cofunded by the Office of Science, NNSA, and the Department of Homeland Security. The demolition of the Bevatron at LBNL is funded at $14.0 million.

Workforce Development for Teachers and Scientists

Fiscal Year 2006 Appropriation—$7.1 Million; Fiscal Year 2007 Request—$10.9 Million

The mission of the Workforce Development for Teachers and Scientists (WDTS) program is to provide a continuum of educational opportunities to the Nation's students and teachers of science, technology, engineering, and mathematics (STEM).

The Laboratory Science Teacher Professional Development (LSTPD) program increases to expand participation from 108 teachers in fiscal year 2006 to 300 in fiscal year 2007. The Faculty Sabbatical activity was initiated in fiscal year 2005 for faculty from Minority Serving Institutions (MSI) and reduced in fiscal year 2006 due to feedback from MSI faculty who expressed their inability to participate in sabbatical programs and a preference for shorter fellowship-type opportunities. Fiscal year 2007 participation will be reduced to two faculty members. The Science Undergraduate Laboratory Internship (SULI) programs will be increased to add approximately 55 students. The Albert Einstein Distinguished Educator Fellowship and the National and Middle School Science Bowls will all continue.

Science Program Direction

Fiscal Year 2006 Appropriation—$159.1 Million; Fiscal Year 2007 Request—$170.9 Million

Science Program Direction (SCPD) enables a skilled, highly motivated Federal workforce to manage the Office of Science's basic and applied research portfolio, programs, projects, and facilities in support of new and improved energy, environ-

mental, and health technologies. SCPD consists of two subprograms: Program Direction and Field Operations.

The Program Direction subprogram is the single funding source for the Office of Science Federal staff in headquarters responsible for managing, directing, administering, and supporting the broad spectrum of Office of Science disciplines. This subprogram includes planning and analysis activities, providing the capabilities needed to plan, evaluate, and communicate the scientific excellence, relevance, and performance of the Office of Science basic research programs. Additionally, Program Direction includes funding for the Office of Scientific and Technical Information. The Field Operations subprogram is the funding source for the Federal workforce in the Field responsible for management and administrative functions performed within the Chicago and Oak Ridge Operations Offices, and site offices supporting the Office of Science laboratories and facilities.

In fiscal year 2007, Program Direction funding increases by 7.4 percent. Most of the increase will support an additional 25 FTEs for program management positions, to address recent committee of visitor recommendations and to manage the increase in the research activities in the fiscal year 2007 budget. The increase also supports a 2.2 percent pay raise; an increased cap for SES basic pay; other pay-related costs such as the government's contributions for employee health insurance and Federal Employees' Retirement System (FERS); escalation of non-pay categories, such as travel, training, and contracts; and increased e-Gov assessments and other fixed operating requirements across the Office of Science complex. Finally, the increase will cover requirements not requested in previous budget requests, including travel expenses of Office of Science Advisory Committee members and requirements related to Appendix A of OMB Circular A–123, Management's Responsibility for Internal Control.

Safeguards and Security

Fiscal Year 2006 Appropriation—$68.0 Million; Fiscal Year 2007 Request—$71.0 Million

The Safeguards and Security (S&S) program ensures appropriate levels of protection against unauthorized access, theft, diversion, loss of custody, or destruction of DOE assets and hostile acts that may cause adverse impacts on fundamental science, national security or the health and safety of DOE and contractor employees, the public or the environment. The Office of Science's Integrated Safeguards and Security Management strategy encompasses a tailored approach to safeguards and security. As such, each site has a specific protection program that is analyzed and defined in its individual Security Plan. This approach allows each site to design varying degrees of protection commensurate with the risks and consequences described in their site-specific threat scenarios.

The fiscal year 2007 budget will ensure adequate security posture for Office of Science facilities by protecting fundamental science, national security, and the health and safety of DOE and contractor employees, the public and the environment. Fiscal year 2007 includes funding necessary to protect people and property at the 2003 Design Basis Threat (DBT) level. In fiscal year 2007, an increase in funding for the Cyber Security program element is being requested to begin to address the promulgation of new National Institute of Standards and Technology (NIST) requirements which are required by the Federal Information Security Management Act (FISMA) to improve the Federal and an Office of Science laboratory cyber security posture.

CONCLUSION

I want to thank you, Mr. Chairman, for providing this opportunity to discuss the Office of Science research programs and our contributions to the Nation's scientific enterprise. On behalf of DOE, I am pleased to present this fiscal year 2007 budget request for the Office of Science.

This concludes my testimony. I would be pleased to answer any questions you might have.

Senator DOMENICI. First I want to commend you for your approach to enhancing this office and trying to get it on the path that is declared by the President and those who pursue it with vigor, doubling the office. We have all wanted it to move in the direction you are talking about. Let us hope you can keep it going that way. That has tremendous, tremendous consequences for our children and our country's future and nobody quite figures that when you

use all these words, but believe it. That is what it is. It is developing the capacity to make sure that the brains of our young people of the future are able to be truly fully developed in competition with the world. That is what we are talking about.

Now, having said that, you heard some concerns. Does any one or two things pop out that you would like to answer right now, or would you like to move on?

Dr. ORBACH. I think I would prefer to move on and respond to questions.

Senator DOMENICI. All right, we are going to start questioning, and we are going to start with the Senator from Colorado.

NATIONAL RENEWABLE ENERGY LABORATORY

Senator ALLARD. Thank you, Mr. Chairman.

I want to start out with the National Renewable Energy Laboratory in Colorado. As you know, you are aware of its importance and I know that you are also aware of the difficulties we have had there. I guess the question that comes to mind is, do you believe that the Department of Energy has all the tools it needs to see that a situation like that never occurs again?

Mr. GARMAN. No, sir I do not. I have begun to explore with the subcommittee staff a new tool that might help us in the future have greater flexibility. This tool involves being able to get at some old program dollars that are nonperforming or underperforming and get them in the game so that we can have more flexibility to prevent that sort of thing from happening again. The subcommittee staff has been very accommodating in listening to our ideas and we think we can come up with——

Senator ALLARD. I appreciate your efforts in that regard. What portion of your budget is disbursed based on earmarks and what portion is given under grants?

Mr. GARMAN. It varies by program. In the Office of Energy Efficiency and Renewable Energy, which has received a significant amount of attention, the biomass program is earmarked or subjected to congressionally directed spending of 57 percent of the total program dollars, geothermal 16 percent, solar 17 percent, wind 33 percent, freedom car and vehicle technologies 11 percent. Those are the major earmarked programs.

Senator ALLARD. What was the last one?

Mr. GARMAN. Freedom car and vehicle technologies.

Senator ALLARD. I see. What was the percentage on that?

Mr. GARMAN. 11 percent.

I do not want to be misconstrued. Some of the congressionally directed projects are very good projects and let me say that out front. We have some projects, excellent work, excellent R&D outputs, and the only negative thing that anyone in the program could say about it is that it was not competitively awarded.

But we do subject these programs to merit review after the fact and we evaluate them and we try to get the very best R&D outputs that we can out of them. So I do not want this to be misconstrued—they have presented us with some challenges, but they also have presented us with some opportunities.

Senator ALLARD. Well, I thank you for your willingness to try and work with the committee and work with our office.

Senator DOMENICI. What is an earmark? How did he—did he define an "earmark" there?

Mr. GARMAN. No, sir.

Senator DOMENICI. Could we do that, Senator? Would that be all right, if I asked him what that means?

Senator ALLARD. Yes, go ahead.

Mr. GARMAN. Our definition of an earmark is, in its simplest form, when the recipient of the funding is designated.

Senator DOMENICI. Is designated by the law?

Mr. GARMAN. In the report language, the report language will specify projects, and our consultations with the subcommittee staff will designate the recipient in many cases.

Senator ALLARD. Thank you for following up on that, Mr. Chairman.

ROCKY FLATS MINERAL RIGHTS

Let me also go on to Rocky Flats. Last year Congress passed legislation at my behest that authorized the Secretary of Energy to purchase some mineral rights at Rocky Flats. This authority was provided just for 1 year and I understand that minimal progress has been made so far. What is the Department of Energy's plan for purchasing the essential mineral water rights there at Rocky Flats and when do you expect this transaction to be completed?

Mr. GARMAN. I am going to have to take that question for the record, Senator, and get back to you on that quickly, if I can.

[The information follows:]

ROCKY FLATS LITIGATION

I have not personally been involved with this case, but I am informed that the Department's lawyers' oversight of it has been quite proactive. They advise that there is no evidence that properties in the vicinity of Rocky Flats suffered extensive damage. Just last year the Agency for Toxic Substances and Disease Registry (ATSDR) issued a report concluding that the "studies and sampling data generated by numerous parties, including the U.S. Environmental Protection Agency (EPA), the Colorado Department of Public Health and Environment (CDPHE), the U.S. Department of Energy (DOE) and its contractors and local community groups, universities and private researchers . . . paint a consistent picture of the public health implications of environmental contamination" near Rocky Flats, and that picture is that "past, current and future exposures are below levels associated with adverse health effects." In fact, ATSDR reported that "estimated total exposures to radiation from the soil . . . are 3,000 times lower than the average exposures to ionizing radiation experienced by United States residents."

Senator ALLARD. I would appreciate it if you would. This is something that is really important to get that wrapped up. We want to transfer that over to the Department of the Interior to be managed as a refuge. That cannot happen until we get this issue resolved. So it is important, I think, that we get this taken care of. I have received some information regarding that perhaps maybe it was not progressing along as it should and if it is not I would like to know why and what the hold-up is on that. So the sooner you get back to us, I would appreciate it very much.

Mr. GARMAN. Yes, sir.

Senator ALLARD. With regard to—it looks like my time has expired, Mr. Chairman.

Senator DOMENICI. Thank you very much.

Senator Murray.

PNNL 300 AREA

Senator MURRAY. Thank you, Mr. Chairman.

Dr. Orbach, as you know, when we talk about Hanford cleanup the plant and tank farms are the first thing that comes to everybody's mind, but there is a lot of work to be done across the complex and progress is being made. The river corridor cleanup, which includes the 300 Area, is moving forward better than expected right now, but there is an obstacle out there. As you well know, the PNNL has a lot of capabilities. It is housed in that 300 Area and it has to exit those facilities and relocate.

The Capability Replacement Laboratory project has been devised to meet that need and the goal of that project is to keep both the cleanup at the Hanford site and the PNNL work on track. In December of last year, the CD–1 for this project which outlined a schedule for the PNNL exit was approved. But it now appears that this schedule is going to cause a delay in the river corridor cleanup. Are you familiar with that issue?

Dr. ORBACH. Yes, I am, Senator. I believe that the 2015 date is still on track and that we can meet that commitment. The change has been a consequence of the complexity of the facilities required to receive the workers who are in the 300 Area. But we now have a robust plan with both the——

Senator MURRAY. You do understand it is going to be a cause of delay now without additional funding?

Dr. ORBACH. The funding is actually on track. There has been a delay, that is correct. But the target date still remains.

Senator MURRAY. Well, within the 2007 budget request all of the funding is contained in the NNSA budget. Can you explain why there are no Office of Science funds that are requested?

Dr. ORBACH. Yes. It is simply a question of phasing. The Office of Science funding in terms of our responsibility will show up in the fiscal year 2008 budget and it is just a question of when—which agency puts its funding in. But as I say, we have a phased structure for both the Office of Science, NNSA, and also DHS to create the facilities that will be required to move people from the 300 Area.

Senator MURRAY. So there is no delay due to the PNNL exit schedule?

Dr. ORBACH. There is no delay with regard to the river corridor commitment. There is a—we have extended the closing of the 300 Area so that we can——

Senator MURRAY. To accommodate that.

WASTE TREATMENT PLANT

Dr. ORBACH. To accommodate a proper facility, yes.

Senator MURRAY. Well, I want to keep working with you on this because it obviously has a big impact on our State, and I appreciate the work we have done on that.

Mr. Chairman, I see that Assistant Secretary Rispoli is in the office and I wanted to ask him a question, with your permission, about the EM budget regarding the vit plant and if he could just tell us where we are on that and give us a quick update on how

we are going to address the new cost and schedule while he is here, if you would not mind.

Senator DOMENICI. I have no objection, unless you all do.

All right. If there is none, let us—state your name and glad to have you here.

Mr. RISPOLI. Thank you, Mr. Chairman. Mr. Chairman, members of the subcommittee, I am Jim Rispoli, the Assistant Secretary for Environmental Management.

Senator, I would be happy to take your question.

Senator MURRAY. Thank you. I just wondered if you could give us while you are here a quick update of where we are on the vit plant. We all know there is a long road ahead of us. I appreciate the better communications we are having this year. But if you could just give the committee a quick update on where we are on this, how we are going to address the technical issues, and where we stand on the new cost and schedule baseline.

Mr. RISPOLI. I would be happy to. As you all know, the budget that was submitted as part of the President's budget did not yet incorporate any of the new cost estimates that are being worked, but subsequent to the budget being delivered, in fact within just the several weeks afterward, we began delivering reports to the appropriate committees and subcommittees in the Congress as well as to the delegation of Washington State.

We have now got approximate costs that have not been validated by the Corps of Engineers, which is doing that effort for us. So quickly where we are: The estimates that we have to date are in the range of $10 to $11 billion. That does not necessarily include risk that is not within the control of the contractor or the Department. That is called programmatic risk and that is addressed in some of the reports that we have delivered. But we are in that range.

Meanwhile, the Army Corps of Engineers is reviewing a technical estimate for the project cost and schedule that amounts to, I am told, 87 looseleaf volumes of information. They will be complete with the evaluation of the whole estimate late this summer, in time for us to communicate that to the Congress.

But the figures that I gave you are the range that we are talking about. We have worked very vigorously to address the issues. They are broken into three categories. One of them is project management types of issues and we have taken strong action based upon several of the reports that we have received and provided to you and the subcommittee and the committees. We have taken vigorous action to improve our project management both at the site and at the headquarters by addition of key qualified personnel. For example, we have certified—the project manager there has been certified by an independent board last December as qualified to be in charge of that project. We have added people in the project management area at both headquarters and the field, including contracts type of people.

The technical issues, as you know, are very complex, and we did deliver a report to this subcommittee and other committees and your delegation. We have identified through bringing in a team of best and brightest from all segments of the industry, not just Bechtel but their competitors, academia, other areas, and have identi-

fied the technical issues. The team, the technical team, believes all of these can be solved, but the good point is that we have them on the table now so that we can solve them now and do not have to confront them downstream as new surprises at that point.

So we consider this to be a major accomplishment that we have brought in this team of very accomplished people to look at the technical issues.

Senator MURRAY. I really appreciate that and I appreciate your staying in touch with us and communicating on this. Obviously it is going to have an impact. But my concern is now the vit plant is going to be delayed, but the cleanup of the tanks is still a really pressing issue, and how are we going to pay for that when there is no funding for supplemental treatment in the budget?

Mr. RISPOLI. Yes, I understand the question. The question is that we have been evaluating a supplemental treatment that is called bulk vitrification. I have visited the site several times to see the mockup of how that process would work. Our intent is that this summer—I should mention that I have spoken with executives at both CH2M Hill, which is the prime contractor, as well as to corporate officers of AMEC, which is the subcontractor that is doing that.

Our objective is to get a cost and schedule estimate—we call it a baseline—this summer that we can then independently validate. We do not know——

Senator MURRAY. Including the treatment?

Mr. RISPOLI. Including that—this is for the supplemental treatment.

We do not know at this point what the spending profile would be because we do not yet have the cost and schedule estimate in our hands to then be able to independently review.

Senator MURRAY. But you expect to have that for us by the end of the summer so we can know what this committee appropriations bill will need——

Mr. RISPOLI. We expect to have that information from the AMEC subcontractor through the prime contractor by the end of the summer, so that we can then independently evaluate it and determine the best path forward. In the mean time, however, the funds that we have got right now are being used to develop that cost and schedule estimate.

As I have stated before for the record, we need supplemental technology. As you know, the vitrification plant on the low activity waste side is not designed to handle 100 percent of the low activity waste. So we need the supplemental technology. We believe this is the viable approach to do it. We just need the cost and schedule estimates that reflect the solution. They have technology issues as well that are being solved, and once we have that and validate it we will be able to communicate that to the Congress to come up with a path forward for that.

Senator MURRAY. Well, I am concerned that we appear to have a gap in funding and I want to pursue that. Mr. Chairman, I know my time is up, but I would like to continue to have a conversation with you about this, because this really is a critical issue for all of us.

Mr. RISPOLI. Yes, Senator, I understand your point.

Senator MURRAY. Thank you.

Mr. RISPOLI. Thank you.

COAL RESEARCH AND FUTUREGEN

Senator DOMENICI. Well, let me just say to all of you—and I guess this is a tribute to the top of the Department—I really am convinced that you are all trying to get this job done, and I am very impressed and enthused that we will get there, in spite of budget problems.

Let me take an issue that I want to try to understand. Could we bring Mr. Jarrett to sit by you, Mr. Under Secretary, and let me talk about coal, wherever he could fit there. Now, let me address the issue of coal in terms of what we are trying to do. We have a very serious problem in the transportation area of the United States, of using too much fuel that comes from overseas that are derivatives of oil. We have this big commodity over here in the United States called coal, which obviously scientifically is not too far afield from oil. They are very similar.

There are two things we have been trying to do. No. 1, we have been trying to clean up the coal as we burn it, and we all call that clean coal technology. No. 2, we have been trying to convert it to fuel, to liquid, so it can be used for fuel. The Nazis did a little bit of that to save them at the end of the war, right. You know that.

Mr. JARRETT. Yes.

Senator DOMENICI. It was not very terrific, good, but they did do some. We know how to do it. We have not moved very dramatically.

The last one has to do with global warming. We are working on the issue of how do you get carbon out of the coal as you burn it, as you convert it. There are different technologies, but we have been throwing around the word "sequester" or get the carbon out.

Now, whoever can best explain to me on the record here for 5 minutes, what is going on in terms of these three areas? Could you start with the last one first, the one of sequestration, sometimes referred to as America's FutureGen project or program, or an effort to develop an IGCC facility? Now, where are we with reference to this in terms of the money we have and the program you have put before us as you have attempted to assimilate this?

I understand you are new, but you understand well, and I compliment you and congratulate you for taking the job, Mr. Jarrett.

Do you want to do that? Do you want to let him do that?

Mr. GARMAN. Sure.

Senator DOMENICI. All right.

CARBON SEQUESTRATION

Mr. JARRETT. There are a lot of questions in there, but I will start with the issue of carbon sequestration. As you know from conversations you and I have had previously, I am a strong believer that we need to advance our clean coal technology programs in this country because it is cheap, it is domestic, and it is plentiful. We can produce power from coal today and we do. Fifty-two percent of our electricity today comes from coal. We believe that coal will maintain or actually grow its market share in the decades to come, based on all of the projections.

The obstacle that we have with developing our coal resources are environmental, and I will say up front that today we have the technology to utilize our coal and take care of the environment. What we cannot do is do it at an affordable cost. So all of our clean coal technology programs are aimed at learning how to develop and utilize that vast resource that we have in this country in an affordable way.

Many of the problems have been resolved. Many of the environmental problems are well on the way to being resolved. But I think the Holy Grail for the coal program is to figure out the ways to eliminate carbon gas emissions from the combustion of coal in an affordable way. We are working on a couple of technology paths forward to do that. We are looking at more efficient ways to remove carbon gases in the existing fleet of pulverized coal powerplants that we have in this country.

Senator DOMENICI. I understand. Now just let me interrupt. Between you and the Secretary, just tell the committee. Our objective is to use Government to the extent we can to move this technology forward. We are not a sole player. The private sector wants to do this, too, right?

Mr. JARRETT. That is absolutely correct.

Senator DOMENICI. And it would be a great big victory for them. They have got a giant future use for coal and they are in business, and they have told climate change people, we have made a breakthrough, right?

Mr. JARRETT. Yes.

Senator DOMENICI. Now, what are we in this budget—how much money do we have directed at this effort between the two of you? And are we doing the right thing, and did you cut the program or did you move money around, and are we still moving ahead with FutureGen or whatever? Please tell me. A lot of people come to our offices, his and mine, telling us they have got a solution to this and you all just will not listen to them. They have been in there to see you and they have got this idea.

What is our role in all this? You have got my gist here. Just talk at me for 5 minutes. What are we doing about all this?

Mr. GARMAN. There are some common threads in here that we are looking to exploit. First of all, it has become clear that gasification of coal is a pathway that leads us to both liquefaction, that can give us liquid fuels, it can lead us to opportunities to sequester carbon dioxide, it can lead us to opportunities to make a cleaner-burning conventional coal plant through IGCC technology.

So gasification technology is something the Department has worked on for a long time and there are commercial gasifiers available today, just as there are commercial liquefaction plants available today. The South Africans have been making liquid fuels from coal. Syntroleum, an outfit that is working today, has technology to do that.

The real issue is there are some technology risks, but there are financial risks. These are more expensive. As I think Senator Bond was commenting, there are ways to make diesel fuel from coal today if you can finance something on the order of a $6 billion plant for a 150,000 barrel-a-day capacity.

Getting financing for that is very tough in this market. If Wall Street was convinced that oil was going to stay high, then it might be easier. But it is a $35 or $40 per barrel threshold most likely in getting that kind of financing. So in that respect the loan guarantee authority could play an important role in getting these technologies, which we think will work and that they are proven, into the marketplace so we can get some experience.

There are companies, AEP among them, who is committed to building integrated combined cycle coal plants, gasifying the coal. There are companies, BP among them, who are looking at gasifying petroleum coke and sequestering the carbon dioxide in an enhanced oil recovery activity. These are all good things that are going on out there.

We think through a combination—FutureGen is really in my mind the project that tries to package these technologies together and demonstrate them as packaged technology in a way that has not been done before. Thus it is very important to us and we want to continue that work.

We also need to get the Office of Science more involved with us in the carbon sequestration aspect. They are going to do it and they are excited about the prospect, because we have to be able to convince the public that when we capture and sequester carbon dioxide in a saline aquifer or in an unminable coal seam or in an old oil and gas field that it is going to stay there, that it is not going to come out 10 or 50 or 100 years in the future.

Senator DOMENICI. We understand.

Mr. GARMAN. That is a scientifically rigorous process that, frankly, we need Dr. Orbach and his folks' help with.

So what I am trying to do is to paint a picture that we think, through partnerships with the private sector, partnerships with the Office of Science, we think that we are building a program that can demonstrate these technologies and validate the costs and get them ready for the private sector to take up.

The decision as to whether the private sector is going to do that in large part is dependent on their guesstimates of what you are going to do with respect to carbon.

Senator DOMENICI. They are going to make a marketplace decision.

Mr. GARMAN. That is right. If they think carbon is going to cost $30 a ton, they will go in one direction. If they think carbon emissions are going to be free, they will go in another, in my view.

Senator DOMENICI. Mr. Jarrett, any further comments?

Mr. JARRETT. No.

Senator DOMENICI. Okay, good.

Senator ALLARD. Mr. Chairman, could I ask a question on that?

Senator DOMENICI. Yes.

Senator ALLARD. If we have carbon left over, these synthetic carbons, is that a potential use for that carbon? These are very lightweight, very tough materials.

Mr. GARMAN. Yes.

Senator ALLARD. Is that a place for the carbon?

Mr. GARMAN. Yes. Yes, it is. We do not necessarily have to take the carbon dioxide and put it in the ground. We can—it is poten-

tially possible to take this carbon from that stream and use it to make carbon fiber, to lightweight vehicles and what-not.

There are also interesting opportunities—and this is again part of why I am so excited about getting the Office of Science involved in this. There are things that we are not looking at that have great potential. An interesting example is there are folks in Arizona that are fooling around with the notion of taking a carbon dioxide stream directly from a coal plant, pumping it into brine water in the desert in between large panels of glass, growing algae, which flourishes in the brine water, exposed to all this carbon dioxide, and taking that algae twice a day, harvesting it twice a day because it grows so quickly, and turning that into ethanol, which is an interesting and novel approach.

This is something that other folks are looking at. Now that we are in essence getting the Office of Science more integrated with us, which is long overdue and a great credit to Dr. Orbach, these are the sorts of things that we hope we are able to get involved in.

Senator DOMENICI. But all this is not tomorrow. People are asking if we are going to get this done, are we going to get somebody to propose to build a $6 billion IGCC plant within the next year, do we have a program in place that might facilitate somebody doing that.

Mr. GARMAN. That was a coal liquefaction plant. The IGCC plant could come in below that.

Senator DOMENICI. Well, tell me which one would be first?

Mr. JARRETT. Well, Senator, the IGCC plants are being proposed——

Senator DOMENICI. Pilots.

Mr. JARRETT [continuing]. Today as we speak. But the coal liquefaction plants, there are proposals or ideas that come to me from across the country in the 2 months that I have been there, and they all have a common problem. We have the technology to produce, to go coal-to-liquids, to produce ultra-clean jet fuel and diesel fuels and other petroleum products out there. But the stumbling block for all of them is financing, and whether it is a $6 billion plant or—I think the first several will be much more modest than that.

But the problem with all of them is the uncertainty about what is going to happen with world oil prices, because we know that right now—we know we can produce fuel from coal at the low $40 per barrel equivalent for a first- or second-of-a-kind plant, and that by the time we get to a fourth- or fifth-of-a-kind plant we will have that technology worked so that we can produce fuel at about $35 a barrel.

But the concern is when you make that kind of a substantial capital investment and then world oil prices were to drop to some number below that. Then you have threatened the financial viability of that plant.

Senator DOMENICI. Can you get straight one last question in my mind, then I am off this issue. I am sorry it took so long. Which is going to come first in these plants that we are going to build? Which commercial consortia or company is going to get the first one and what is it going to be? Coal liquefaction for diesel fuel, is that what it is going to be, diesel and related products?

Mr. JARRETT. I believe that coal-to-liquids and commercial deployment of IGCC plants for producing electricity will happen simultaneous. We know that there are IGCC commercial plants on the drawing boards today.

Senator DOMENICI. And we have within the Department now the facilities to be helpful if the loan guarantee works? That is one instrumentality to help with the financing. And secondly the issue of base price, a bottom line price. If the United States were to adopt a statute establishing a bottom line for the price of crude oil at $35 right now and said that is going to be it, or $40, and said we are going to take care of any price that varies from that, that would shake this industry up, would it not?

Mr. JARRETT. My personal view is that would shake the coal-to-liquids industry up in a hurry. But we are having conversations with that industry and asking them the very questions that you are asking right now. That is really as a follow-up to the meeting you and I had not too long ago to talk about those questions.

Mr. GARMAN. My personal view is that IGCC plants will come first, simply because there are folks that know that if they propose to build a pulverized coal plant they will be sued, and they are just looking at IGCC as a cleaner—they will not capture and sequester carbon dioxide, but it will be a cleaner burning plant that is more efficient than a pulverized coal plant.

The interesting thing is that there is a lot of—and I want to make this point. There is a lot of DOE past technology work in this area. These gasifiers—this is a success story for the Department and it is technology that this Department has been involved in and you have been involved in promoting for decades. And finally we are at the threshold of seeing these technologies coming——

Senator DOMENICI. But is it the right thing to happen now?

Mr. GARMAN. I believe it is. I believe it is time for our technologies to enter the market.

Senator DOMENICI. Tell me which one it is going to be, again?

Mr. GARMAN. I think it is going to be integrated gasified combined cycle coal plants that will come into the market.

Senator DOMENICI. What are they going to do with the carbon?

Mr. GARMAN. These first ones will not capture carbon dioxide. They will simply gasify the coal for burning in a turbine and generating electricity. These first plants will not capture carbon dioxide, but they are more efficient than pulverized coal plants.

Senator DOMENICI. Are these not a little more expensive?

Mr. GARMAN. Yes, sir, they are, and that is why they have not been built. Compared to a pulverized coal plant, they are more expensive.

GASIFIER TECHNOLOGY

Senator ALLARD. That brings up, Mr. Chairman, a quantitative question I wanted to ask you. How much natural gas can be brought on line with a lot of these technologies? Is there research and testing? Do you have any idea?

Mr. GARMAN. I would have to take that one for the record to give you a good authoritative answer.

[The information follows:]

GASIFIER TECHNOLOGY

The National Coal Council examined that question and in their March 2006 report to the Secretary: "Coal: America's Energy Future." One of their key findings was that using coal to produce natural gas could provide an alternative to at least 15 percent of America's annual natural gas consumption by 2025, or the equivalent of 4 trillion cubic feet (Tcf) per year. They projected that this additional supply would use an additional 340 million tons of coal per year. This amount of gas is roughly equal to Energy Information Administration's (EIA's) projection of liquefied natural gas imports in 2025.

Currently, the Great Plains Gasification plant in Beulah, ND produces 148 million standard cubic feet per day (54 billion standard cubic annually) of substitute natural gas (SNG) from North Dakota lignite. This plant, which came on line in 1984, uses older fixed-bed gasification technology. The SNG produced in the plant is added into the existing natural gas pipeline network to heat thousands of homes and businesses in the United States. It should be noted that carbon dioxide generated in the process is sent via a 330 km pipeline to Saskatchewan, where it is used for enhanced oil recovery—the Weyburn project. This is one of the Carbon Sequestration Leadership Forum projects which DOE has been sponsoring along with other international participants. This carbon dioxide remains sequestered in the oil field, and therefore this plant provides an early preview of the kind of advanced near zero-emission coal technology we are developing in the DOE coal program.

The technology to produce SNG is commercially available today. The DOE research and development program in coal gasification is focused on the development of advanced technology to reduce cost, improve efficiency, and enhance reliability when used in future near zero-emission coal plants. These developments are also expected to provide significant benefits for plant configurations that produce SNG alone or in conjunction with other products such as electricity.

Senator ALLARD. Okay.

Senator DOMENICI. Senator, I took a lot of time. Do you want to take a little more time?

ROCKY FLATS LITIGATION CLAIMS

Senator ALLARD. Just one more question. That was one of them, and this fits in here very naturally. This has to do again with Rocky Flats. The former weapons contractors, Dow and Rockwell, and the property owners nearby have been engaged in a protracted legal discussion about whether these property owners will be compensated for damage caused by the environmental contamination at Rocky Flats.

Last February a jury awarded the property owners, in my view an incredible amount of money, over $550 million in damages. I understand the contractors are now appealing the decision. It seems to me that the only people who are really benefiting from this are the attorneys. They have already collected more than $100 million in legal fees.

Because Dow and Rockwell now are going to be indemnified by the Federal Government, I guess the real losers are going to be the American taxpayers. To what extent are you involved with this case and do you have any evidence of extensive damage from the operation?

Mr. GARMAN. Because this is a matter in active litigation, I would—and I apologize for doing this—but I would like to take that for the record. I am not a lawyer and it is dangerous for me to comment on issues in active litigation.

[The information follows:]

ROCKY FLATS MINERAL RIGHTS

The Department of Energy (DOE), in partnership with the U.S. Fish and Wildlife Service (USFWS) and Natural Resources Trustees (Trustees), has established and

is currently executing a plan for purchasing the essential mineral rights at Rocky Flats.

The acquisition strategy for the mineral rights will be conducted in two phases. First, the Trust for Public Lands (TPL), a nonprofit group specializing in real estate acquisitions for Federal Government entities, will purchase the mineral rights from willing owners at fair market value, and will perform any appraisal updates required. In the second phase, these rights will be purchased by the DOE, with the funds provided in the Energy and Water Development Appropriations Act for fiscal year 2006.

At this time, TPL, DOE, and USFWS are finalizing a letter of agreement, stipulating the process for contacting willing sellers and ascertaining fair market values.

DOE and the USFWS fully expect to accomplish the acquisition of mineral rights well within the timeline mandated by Congress, and in harmony with the local stakeholder community.

Senator ALLARD. Well, give us some thoughts, if you would, in response, to the extent that you think you can.

Mr. GARMAN. Yes, sir.

Senator ALLARD. I understand your point on this.

Thank you, Mr. Chairman.

LOS ALAMOS NEUTRON SCIENCE CENTER

Senator DOMENICI. Thank you very much.

Dr. Orbach, it is not well known that the Office of Science funds a considerable amount of research at some of the NNSA laboratories, which is the defense nuclear-related laboratories. The Office of Science supports around $70 million worth of research at Los Alamos, including work at the Neutron Science Center, called LANSCE. That is one of the most powerful linear accelerators in the world. Albeit quite old, it is still one of the most powerful.

As you know, NNSA, the principal sponsor of LANSCE, is considering a major accelerator refurbishment project to secure lifetime extension of the facility. If NNSA goes forward with this project, would the Office of Science continue to support science research at LANSCE?

Dr. ORBACH. Mr. Chairman, yes. The Lujhan Center, which is our pulsed neutron center feeding off of LANSCE, has been a very successful exercise in the last few years and we have every intention of continuing that support. It will be a very helpful adjunct to the SNS.

ALTERNATE SOURCES OF ENERGY

Senator DOMENICI. The President has made curing our Nation's addiction to oil as a top priority. In fact, the President's statement about that was one of the most exciting things that he said, and also setting a goal for reduction in the amount of oil that we might have to import. That has caused everybody around here to want to double that goal. I am kind of beset by Senators wanting a new law that will do more than that and we are wondering about how we are going to do that.

But one of the—I am aware of the fact that the Department has provided $40 million to support nuclear energy research and that the Energy Policy Act authorized $49 million to be used by the Office of Science to support what is called integrated bioenergy R&D with regard to cellulosic biomass. What promising technologies are on the horizon that will enable us to turn corn stalks and wood

waste into ethanol, and what other types of research in your office support the reduction of our use of fossil fuels?

Dr. ORBACH. We have a broad portfolio which ranges from alternate sources of energy through ITER, for example, also through efficiencies, lighter materials and so on, that we think will increase efficiencies and reduce consumption of energy. But to be very direct, we also believe that our programs that involve genomics, genomics GTL, will address the bioenergy opportunities directly. We have a commitment to expand and create new research centers for bioenergy that will be focused on cellulosic ethanol.

In addition, we have every reason to believe that we can mimic nature's structures in photosynthesis to go from solar to fuels, as well of course as photovoltaics. So we are examining a wide variety of really transformational approaches to reducing our dependency on oil.

INTERNATIONAL LINEAR COLLIDER

Senator DOMENICI. I have a number of questions about the genome program, the genome project that you have got going, but I think I am going to submit them. They require a very long introduction to the question and I do not want to take that much time.

But I want to move to a rather interesting subject matter, at least between you and me. Perhaps nobody else in the world cares. It relates to the International Linear Collider. This year the—no, I am not going to do that one either. I am going to give you that one to answer, okay.

I am going to talk with you a little about the Linear No Threshold Standard. Have you got that, Linear No Threshold Standard. Last year we discussed this Linear No Threshold Model research that the Department was assembling. I understand that there is a French study that was published last year that challenged the validity of the Linear No Threshold model that we were putting together. The effect—all of this has to do with the effect of low dose radiation, and the French study urged a total reevaluation of this model.

Am I correct so far?

Dr. ORBACH. Yes, you are, sir.

Senator DOMENICI. As it applied to low doses of ionized radiation, below 10 rems. Now, first let us stop for a minute. Regardless of whether there is any big application to this subject or not, what does "10 rems" mean?

Dr. ORBACH. It is a measure of the effect on biological material of radiation, either alpha or gamma radiation, and the energy deposited in the material itself. The energy deposited is measured in terms of rads. It is in ergs per gram. Then that is converted to rems to take account of the fact that the different kinds of radiation have different effects on the biological material.

Ten rems is our maximum for what we call low dose radiation.

Senator DOMENICI. So if we are trying to say you can use something that is dispensing with radiological material that is going to let that get out, we have a standard that says it is safe if it is 10 or under; is that what you are saying?

Dr. ORBACH. No, our standards are actually much lower than that.

Senator DOMENICI. Okay, tell me about it?

Dr. ORBACH. The epidemiology research that we have seen does not show significant or any cancerous effects for radiation of 10 rems or less. But the actual amounts of radiation that are used as our standards are orders of magnitude lower than that value.

Senator DOMENICI. But it is an attempt at quantifying?

Dr. ORBACH. Yes. Our program is completely consistent with the French observations and we are now, I believe, at a point where we can work with the EPA to begin to reassess the radiation risks that low dose radiation might involve.

Senator DOMENICI. We jumped ahead here. I was trying to get here on the record how various people in their daily lives are exposed. So I get in an airplane tonight in New York and I fly all the way across the continent to Los Angeles. I am exposed to radiation, right?

Dr. ORBACH. That is correct.

Senator DOMENICI. And it is different than the radiation that I am going to be exposed to if I stand on the ground here, certainly at sea level. And I fly all the way across and I get exposed to radiation, but nobody thinks there is anything wrong with that, right?

Dr. ORBACH. That is correct.

Senator DOMENICI. How much am I exposed to when I fly?

Dr. ORBACH. My memory is about 10 millirems. That is—the round trip I took from New York to London, is of the order of 10 millirems, which would be a hundredth of a rem or a thousandth of the 10 rems.

Senator DOMENICI. Okay. And you did it round trip, it is double?

Dr. ORBACH. Yes.

Senator DOMENICI. Now, let us proceed. The reevaluation of this model that I had gotten to and then we got sidetracked, the model applies to low doses. This is significant for a variety of reasons. But the most significant is that we base all our standards and regulations on levels far below 10 rems; correct statement?

Dr. ORBACH. That is correct.

Senator DOMENICI. In fact, we set our cleanup levels which we just referred to over here for Colorado's cleanup, we set those standards for cleanup levels at levels below 10 and some cleanup levels are under 20 millirems, which you have just described how much smaller that is, far below the natural background of between 200 and 400 millirems.

Dr. ORBACH. That is correct.

Senator DOMENICI. Is this study consistent with the data that the Department has collected under the Linear No Threshold Standard, and are we confident that the conclusion will change current regulations based on science if it is flawed?

Dr. ORBACH. We are convinced that the Linear No Threshold Model is incorrect at the low dosages of 10 rems or less. We are convinced that the scientific data has accumulated, certainly in recent years, to require a reevaluation of the risk of low dose and especially low dose rate radiation, and we are convinced that the epidemiology at 10 rems or less needs to be investigated to determine whether there is any evidence of cancerous consequences.

Senator DOMENICI. How much resistance are you getting and from whom for this rather dramatic statement that you are making here?

Dr. ORBACH. Well, first of all, we do our own research, thanks to the support of this committee and the appropriations over the last 5 years. So our peer-reviewed research projects that are done by researchers all over our country have been accumulating, especially in recent years, to enable me to make this statement.

But then last spring a remarkable set of documents emerged from the French Academies of Science. The French Academy of Science and the French Institute—the French Academy of Nuclear—sorry—of Medical Research published a joint statement which was consistent with our own research findings and in fact made categorical remarks that the Linear No Threshold Model is not based on evidence that exists in the literature today at low dosage.

Senator DOMENICI. We might one day have a half day hearing on what this means, what it could mean.

Dr. ORBACH. I would be pleased to put such a hearing together.

Senator DOMENICI. If this is applied, the reduction in the cost to society could be in the hundreds of billions of dollars over time because we are wasting money protecting ourselves from what we are now told needs no protection. Am I reading it right?

Dr. ORBACH. I would agree. I would agree with that conclusion.

HYDROGEN POWERED FUEL CELLS

Senator DOMENICI. Mr. Secretary, one of the major elements of the bill that we passed, title VIII, was a road map that included revised funding and milestones for the development of hydrogen and fuel cells under the freedom car and the fuel partnership. Can you locate that in your mind or in your recollection, material there? The provision as a result of extensive collaboration between hydrogen and fuel stakeholders and policymakers, in which the research and development needs of the DOE and the industries that were participating were extensively evaluated. I think you might have even been a party to that.

Section 8 reflects Congress' determined will that we wanted the President's 2010 and 2015 goals for hydrogen-powered fuel cells. Can you discuss how the statutory directives of EPAct 2005 figured in the 2007 budget and can you tell us how DOE plans to meet these goals?

Mr. GARMAN. The statutory requirements in the Energy Policy Act comport very, very closely, almost precisely, with our road mapping plan and our long-term and short-term program plans. We have fallen behind in some areas. Our overall goal is still on track. Our goal is to be able to put industry in a position to make a commercialization decision with the technical barriers solved by 2015.

Because of some shortfalls in appropriations and congressionally directed spending, we have let some aspects slip. Last year I think we got about 60 percent of our request——

Senator DOMENICI. I have to excuse myself. I have a phone call here. There is nobody else here, so do not talk.

It looks like that was a most opportunistic moment in time. Others had to leave also. Now we are going to take just 5 more minutes and give you about 100 questions to answer.

Mr. GARMAN. Okay. I will keep the answers very brief then.

Senator DOMENICI. Okay. Finish that answer.

Mr. GARMAN. We have had some programs and some projects slip, but not to the extent that we are moving away from our 2015 goal.

Senator DOMENICI. You mentioned in that statement that part of that problem was because of budget shortfalls. I would assume that there are some technological problems along with it, or is it all money?

Mr. GARMAN. Well, there are some technical challenges that confront us in achieving the full-blown hydrogen vision, and I will just illustrate one and it is another illustration of how we think the Office of Science can be helpful. One of the most challenging aspects of the program is carrying enough hydrogen on board a fuel cell vehicle to give that vehicle the kind of range that a consumer expects, 300, 350 miles.

Today, with current technology the fuel cell vehicles that we have on the road go about 150 miles. That will not fly with the consumer. So we are looking at a variety of different technologies, perhaps involving metal hydrides, carbon nanotubes, a variety of different materials and structures that could hold a lot more hydrogen in a manner that is closer to ambient temperatures and pressures, so that you do not have to use high pressure tanks and some of the other things that, frankly, might be of concern to a consumer.

Just last week in SLAC, I was able to see some work that was being done there to look at how to stack more hydrogen in the carbon nanostructures so that, instead of going to a conventional fueling station the way we do today, you just might pick up a canister of hydrogen-impregnated carbon at Wal-Mart and stick that in your car and that would be your fuel.

So there are all kinds of novel ideas and approaches that we are looking at. Our partners, such as General Motors and Ballard and others, have been doing some very good work. This money is being well leveraged in my view with private sector dollars in achieving these goals.

YUCCA MOUNTAIN LICENSE APPLICATION

Senator DOMENICI. The last question has to do with the Yucca Mountain license application. Secretary Bodman testified that the Department anticipates providing a new schedule for license application and repository operations by early summer. The budget justification material indicates among the tasks to be accomplished in the 2007 budget is defending the license application before the NRC.

My question is twofold. Does the budget request assume that a license application will occur in 2007 and, if not, would the request need to be adjusted? And second, what is the Department's current estimate for the cost of the rail line to Yucca Mountain?

Mr. GARMAN. We do not expect to be in a position to submit a license to the NRC in fiscal year 2007, and we will submit some

materials. Of course, obviously when our schedule later this summer is there we will try to lay it out for you as clearly as we can.

The cost of the rail line is highly variable based on the final routing and of course the cost of steel, which lately is accelerating. But it could be a $2 billion railroad.

Senator DOMENICI. Two billion dollars?

Mr. GARMAN. Yes, sir, it could.

ADDITIONAL COMMITTEE QUESTIONS

Senator DOMENICI. If it could, it probably will. If it could, it probably will be more.

In any event, I am sorry we cannot go on. We have many more questions. Your testimony will be reviewed and we will have some questions on how we might adjust some dollars to accomplish some of the things you could not do. I want to close by commending you once again, you and all of the staff that is here with you, for your hard work, and thanks for your patience today.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SENATOR PETE V. DOMENICI

GENOMES TO LIFE PROGRAM

Question. Dr. Orbach, as you know, genomics research has been a top priority of mine for some time. I am very proud that the Department of Energy took the lead in mapping the human genome. This knowledge provides us the opportunity to understand many biological questions. I am very supportive of the Genomes to Life program, although I am frustrated with the slow pace of deployment of the four facilities. I believe 20 years is too long to wait to integrate the four planned facilities.

I understand the National Research Council has reviewed the Department's current plan and they have made several recommendations to accelerate the implementation of genomics research within the Department. The National Academies has suggested the Department consider integrating the capabilities of each of the four facilities into one facility to address one or two Department core missions such as bio-energy or carbon sequestration. I believe this report has made good recommendations that will save the Department time and money and allow research to begin immediately.

Dr. Orbach, what do you think of these recommendations? Do you believe the Department will realize the same scientific benefit by integrating the four facilities into one?

Answer. The National Academies report was an excellent report. Its recommendations played a key role, along with the announcement of the President's Advanced Energy Initiative, in our recent decision to recast plans for the GTL facilities. The Department believes that the new facilities plan for vertically integrated centers focused on bio-energy research, based partly on recommendations from the NRC panel, should indeed be able to accomplish the GTL program's objectives more rapidly and at reduced cost.

Question. The Department has already issued a Request for Proposals on the first of four buildings. In light of this report, will you cancel the RFP and reissue an RFP based on these recommendations?

Answer. On March 28, 2006, the Office of Science cancelled its Funding Opportunity Announcement (FOA) for a planned GTL Facility for the Production and Characterization of Proteins and Molecular Tags, issued in early January. The Office of Science plans to issue a new solicitation in the coming months for one or more centers for bio-energy research. Centers focused on systems biology research into carbon sequestration and bioremediation are also being considered for future years.

Question. The Academies recommended the Department pursue one or two core missions and support research into bio-energy, environmental cleanup and carbon sequestration. What grand challenge do you believe is the highest research priority?

Answer. In response to the President's Advanced Energy Initiative's mandate for a strong focus on bio-energy, with an emphasis on producing research results that will help reduce the Nation's dependence on fossil fuel, GTL's energy mission is the highest research priority.

LOS ALAMOS NEUTRON SCIENCE CENTER

Question. Dr. Orbach, It is not well known that the Office of Science funds a considerable amount of research at some of the NNSA laboratories. The Office of Science supports around $70 million worth of research at Los Alamos, including work at the Los Alamos Neutron Science Center, (LANSCE), one of the most powerful linear accelerators in the world.

As you know, the NNSA, the principal sponsor of LANSCE is considering a major accelerator refurbishment project to secure a significant lifetime extension of the facility.

If NNSA goes forward with this project, would the Office of Science continue to support scientific research at LANSCE?

Answer. The Office of Science would likely continue to support merit-based scientific research at LANSCE, particularly at the Manuel Lujan Jr. Neutron Scattering Center.

SCIENCE AND ENERGY RESEARCH

Question. Dr. Orbach, the President has made curing our Nation's addition to oil a top priority. I am aware of the fact that the Department has provided $40 million to support nuclear energy research. Also the Energy Policy Act authorized $49 million to be used by the Office of Science to support integrated bio-energy R&D.

With regard to cellulosic biomass, what promising technologies are on the horizon that will enable us to turn cornstalks and wood waste into ethanol?

Answer. We believe that our efforts in the GTL program to harness the powers of the microbial world hold the key to making the production of cellulosic ethanol cost-effective on a large scale. Advances in GTL genomics and systems biology approaches offer potential for improving the enzyme systems that deconstruct plant cell walls and increasing the yield of ethanol-producing microorganisms. In addition, systems biology potentially provides powerful tools for enhancing the productivity of biomass crops by optimizing them for industrial processing.

Question. What other type of research is your office supporting to reduce our usage of fossil fuels?

Answer. In energy supply, the Office of Science is funding fusion energy research, which holds the promise of an economic, environmentally benign energy source. We are also funding research in solar to fuels in which we will try to mimic photosynthetic processes in plants. To reduce energy consumption, we fund combustion research to improve combustion efficiency; research to create lightweight, high-strength materials that improve efficiency; research into materials for transportation, storage and use of hydrogen; and high-performance computers that reduce the time-to-market for new, efficient engine designs (virtual prototypes) and can lead to airframe and vehicle designs that improve aerodynamics.

LINEAR-NO-THRESHOLD STANDARD

Question. Dr. Orbach, last year we discussed the liner-no-threshold model research the Department is assembling. I understand a French study was published last year that challenged the validity of the Liner-No-Threshold model in assessing the effect of low dose radiation and urged the re-evaluation of this model as it applies to low doses of ionizing radiation below 10 rem. This is significant for a variety of reasons, but the most significant is that we base all of our standards and regulations on levels far below 10 rem. In fact we set our cleanup levels at under 20 millirems—far below the natural background of between 200–400 millirems.

Is this study consistent with the data the Department has collected on the Linear-No-Threshold standard?

Answer. Yes, the French Report is consistent with much of the data coming from the DOE Low Dose Program. The new data does not support a linear extrapolation to low doses for cancer risk.

Question. If you are confident of these conclusions how will this change current regulations that are based on a flawed scientific model?

Answer. Our understanding of the biological responses to low dose radiation exposure has increased dramatically. The new data directly challenge major underlying assumptions originally employed when the task of estimating human health risk for low dose exposures was first attempted, primarily using A-bomb survival data. I believe that the scientific community will rethink risk estimation in light of the newer

more biologically rigorous assumptions. At the same time, more attention will be paid to more relevant epidemiological studies of low chronic exposures that mostly show no excess cancers. In the end, EPA and other regulatory agencies which have the lead on setting regulations will use these new scientific data provided by DOE's Office of Science and others.

JOINT DARK ENERGY MISSION

Question. Dr. Orbach, you have consistently argued to sustain our scientific leadership in areas where we can and should be the world leaders. Unfortunately, I fear we are about to lose our leadership in an area where the United States has assembled the best scientific minds and maintain the most capable space program. I am referring to the joint DOE/NASA Joint Dark Energy Mission which is supported by the Office of High Energy Physics and ranked as No. 3 on the 20-year Scientific Technology Roadmap. This project will investigate the universe to understand the most fundamental questions about energy, space and time. In order to fully realize its scientific value we must launch a space-based telescope.

Unfortunately, insufficient funding for this program puts in jeopardy the program and is likely to result in other countries picking off the assembled scientific and engineering talent.

Despite the fact that this project was ranked No. 3 in the Department's 20-year plan, this project seems to have lost favor within the Department and NASA. Why is that? Why isn't the Department fighting to maintain this world-class scientific capability?

Answer. The Joint Dark Energy Mission (JDEM) remains a high priority in the Office of Science. In fact, funding for competitively-awarded dark energy R&D goes up over three-fold in the fiscal year 2007 President's request. We continue to have discussions with NASA on how best to move forward on an interagency basis on JDEM. In February 2005, two interagency Federal advisory committees of DOE, NASA, and the National Science Foundation established a Dark Energy Task Force as a joint subcommittee to advise the agencies on the future of dark energy research on the ground and in space. The final task force report should be released in May 2006 and we expect that our path forward on dark energy studies broadly, and JDEM in particular, could be significantly impacted by the recommendations of this distinguished panel.

Question. How will the Department support the JDEM program as well as other large projects, including the work on neutrino detection and the Large Hadron Collider?

Answer. We believe the SC budget request will adequately support the JDEM mission as well as other large projects, including the work on neutrino detection and the Large Hadron Collider (LHC). As you may know, the just-released National Academies report on the future of particle physics in the United States, "Revealing the Hidden Nature of Space and Time: Charting the Course for Elementary Particle Physics", recommends that our highest priority should be supporting our LHC research program, followed by R&D on the proposed International Linear Collider, and then research including dark energy and neutrinos.

Question. NASA has indicated that a re-plan of the Beyond Einstein program, which supports the JDEM program, will be conducted in fiscal year 2008–2009 to determine mission need. This would effectively kill any opportunity for a space launch for a telescope to support this research. Do you agree with this assessment?

Answer. We had discussions with NASA on this, and we understand NASA will have a competition between the Constellation X-Ray Observatory (Con-X), Laser Interferometer Space Antenna (LISA), and JDEM missions to decide which one could start about 2010. Thus, we believe there is still the opportunity for a joint DOE-NASA JDEM mission.

Question. Why isn't NASA supportive of this mission? Has this changed the Department's view of this project?

Answer. We understand that JDEM remains an important part of the NASA Beyond-Einstein program but they are limited by funding to only moving one of the three missions (Con-X, LISA and JDEM) forward. DOE and NASA both are currently supporting mission concept studies. DOE's view of JDEM has not changed, and we support the JDEM mission.

Question. If NASA isn't supportive of this mission why isn't this reflected in the budget justification?

Answer. NASA is supportive of the mission and will be doing a competition between Con-X, LISA and JDEM in the 2008–2009 timeframe to decide which of the three will go forward about 2010. Both NASA and DOE are currently funding mission concept studies.

Question. How much would it cost for the Department to take over this project and fund the space launch without financial support from NASA?

Answer. An extremely crude early cost estimate for the full JDEM mission and launch is somewhere in the range of $600 million to well over $1 billion, but we would need to carry out a thorough mission concept competition and scientific and technical reviews before proceeding to a more mature cost estimate. We also expect that the soon-to-be-released dark energy task force report (mentioned above) could necessitate a re-evaluation of the optimal path forward including the appropriate scope and scale of JDEM.

INTERNATIONAL LINEAR COLLIDER

Question. This year, the Large Hadron Collider located in CERN will come on-line supporting high energy physics research. In fiscal year 2007, the DOE will fulfill its funding obligation of $450 million of the $6 billion project.

The budget request includes a request of $60 million, an increase of $30 million to support the United States R&D effort to build the next generation collider to replace the LHC, which will initiate operations this year. The budget justification also supports construction studies and siting studies. I understand cost estimates for this next generation machine begin at $7 billion.

Why is the United States rushing to support the next generation machine, before the existing state-of-the-art facility has begun operations? When does the Department hope to break ground on this new machine and where?

Answer. The International Linear Collider (ILC) and the LHC are synergistic from a scientific standpoint. Simply put, the LHC can discover that new phenomena exist and the ILC will tell us what they are and what they mean. It will likely take another 5 years of R&D before we are technically ready to proceed with construction of the ILC, should the decision be made in the affirmative on a domestic and international basis. The current phase of the ILC is an internationally planned and coordinated program of R&D that should result in technical demonstrations of all major system components over the next several years. Our domestic decision process for the construction phase rests primarily on this R&D, the technical cost estimate from the Global Design Effort, and on compelling scientific results from the early LHC program. The next phase for the ILC would then be a thorough multilateral international decision process, ultimately including a competitive site-selection process, allocation of roles and responsibilities, and so on. It is therefore premature for the Department to hazard a guess on when the project could break ground. Our current position is that Fermilab would likely be the optimal site within the United States.

Question. How much does the Department expect the International Linear Collider to cost and what are the cost share arrangements with other countries? Is there a cost the Department believes is too much for this facility?

Answer. We await the Global Design Effort, under Professor Barry Barish, to report a credible cost estimate early next calendar year. Based on the ITER fusion project, it would be reasonable to expect that the host State would shoulder 50 percent of the cost.

Question. Does the Department intend to compete the siting of this new facility among U.S. institutions?

Answer. Our current position is that Fermilab would likely be the optimal site within the United States. The management and operation contract for Fermilab will continue to be open for prudent and necessary competition.

Question. Where does this facility rank in the Department's 20-year plan?

Answer. ILC ranks No. 1 in the mid-term epoch.

OFFICE OF SCIENCE—20-YEAR PLAN

Question. Dr. Orbach, in November 2003, the Department put forward a 20-year plan entitled "Facilities for the Future of Science, a Twenty-Year Outlook" This report identified the facilities and mission that the Department wanted to pursue in near-, mid- and long-term. The selections were reviewed and prioritized by an Office of Science Advisory Committee. One argument for this facility was that it would establish priorities with clear goals that would help with balancing budget priorities and adhere to scientific priorities. One of the facilities identified in the plan was the Rare Isotope Accelerator, listed as the third priority and a near-term goal. This project apparently has been bumped another 5 years into the mid-term.

Is this project an exception and will the Department continue to follow the 20-year plan implemented just a little over 2 years ago?

Answer. Achieving an optimal balance among the many competing priorities for science funding is a formidable challenge. We devote substantial effort to achieving

this task. Our 2003 publication "Facilities for the Future of Science, A Twenty-Year Outlook" marked the first time, to my knowledge, that any government agency either here or abroad publicly issued such a long-range planning document on major scientific facilities. The Facilities publication culminated many months of careful deliberation that consolidated a list of 53 prospective facilities into a list of 28. The Facilities document prioritized the 28 on the basis of "Importance to Science", grouped into three "epochs" on the basis of "Readiness for Construction." These epochs are Near-Term, Mid-Term, and Far-Term, spanning the 20 years. Priorities should be thought of as internal to the respective epoch. Comparison of priorities between epochs would be incorrect.

The purpose of this construction was to recognize that technologies change, and that the determination of which epoch a particular facility fell into might well change with time. The introduction to the document states, in fact: "We know, however, that science changes. Discoveries will alter the course of research and so the facilities needed in the future. For this reason, the 'Facilities for the Future of Science: A Twenty-Year Outlook' should be assessed periodically in light of the evolving state of science and technology."

Thus, overall, the facilities identified and the priorities set in the facilities outlook remain valid. Our prioritization among epochs, however, has changed because we could not predict precisely how quickly various technologies would develop.

Question. Have any of the other projects changed in their position on the list? If so, why?

Answer. Yes, the elimination of BTeV last year because it was determined that it could not be completed in time to provide meaningful results before the Large Hadron Collider starts taking data. And the top priority within the Far-Term epoch, the National Synchrotron Light Source Upgrade (NSLS II), was placed in that epoch because, at the time the facilities outlook was written, it was thought that the technology would not be ready for construction for some years. But the technology developed more quickly than anticipated, and NSLS II should now be regarded as in the Near-Term epoch.

TECHNOLOGY TRANSFER COORDINATOR

Question. The Energy Policy Act of 2005 created the position of a Technology Transfer Coordinator. The Coordinator is meant to focus the Department's efforts to transition energy technologies developed at the National Laboratories into the marketplace. The Act also establishes an Energy Technology Commercialization Fund, using a 0.9 percent set-aside of funds used for applied energy research and development. I understand the Department has not yet acted to comply with these requirements.

Has the Department determined which Under Secretary will have responsibility for enacting these provisions?

Answer. The Department is studying this provision of EPAct and will report back to you when a determination is made.

Question. Since the Office of Science oversees a larger number of National Laboratories than any other office within the Department, should the Technology Transfer Coordinator report to the Under Secretary of Science?

Answer. Once the Department has concluded its assessment of the EPAct provisions, the Secretary will make a determination whether the Technology Transfer Coordinator will report to the Under Secretary for Science.

Question. The provision creating the Energy Technology Commercialization Fund applies to the current fiscal year. Will the Department be able to account for the use of the funds set-aside for the fund for fiscal year 2006?

Answer. The Department is still assessing this provision and will respond once the assessment is complete.

Question. The same section of the Act requires the Department to submit a technology transfer execution plan. What is the status of the Department's efforts to develop this plan?

Answer. The Department is still working on the technology transfer execution plan.

INDEPENDENTLY FINANCED FACILITIES

Question. Dr. Orbach, I understand that DOE is trying to address aging infrastructure crucial for science at DOE and NNSA laboratories through alternative financing such as the use of private third-party financing without the upfront cost to the Federal Government.

What are the DOE plans for supporting and promoting third-party financing, and what are the obstacles faced when initiating projects such as the Science Complex at Los Alamos National Laboratory?

Answer. The Department's approach to alternative financing is to consider it in the acquisition strategy phase of proposed new shorter-term projects. The acquisition strategy is developed after the mission need is approved. If alternative financing is recommended, then a business case must be provided that supports this recommendation. General-purpose type facilities with credible private-sector uses (e.g., office buildings) are usually best-suited for alternative financing.

Each opportunity is unique and the Department reviews each opportunity individually based on its merits. It is not appropriate for me to address opportunities that may be under consideration at Los Alamos because the facility is under the stewardship of the National Nuclear Security Administration.

RARE ISOTOPE ACCELERATOR

Question. The Nuclear Science Advisory Committee was charged in 2003 to compare the capabilities of the proposed Rare Isotope Accelerator (RIA) and the planned GSI facility in Germany. The committee concluded that RIA and the GSI were designed for different purposes and that each would serve large and distinct user communities.

Does the Department accept the committee's conclusion that RIA and the GSI are not duplicative? If not, what is the reason for disagreement with the NSAC assessment?

Answer. The NSAC assessment found that RIA's rare isotope research capabilities were more extensive than those of GSI. The Department accepts these findings.

INDIA'S INCLUSION IN ITER

Question. At the December negotiations to complete the international agreement on ITER, the delegations welcomed India as a full party. With this development, I understand that the parties to ITER now constitute over half of the world's population.

How will the inclusion of India as a full partner in ITER alter U.S. financial commitments to the project?

Answer. The joining of India has not reduced the overall contributions of the other parties, but within those contributions it has enabled each of the Parties to provide an appropriate funding contingency to cover unanticipated costs of the ITER Organization, the legal entity responsible for oversight of the construction, assembly, operation, and deactivation of the facility.

Question. How will the inclusion of India as a full partner in ITER alter U.S. prospects for the development of new technologies likely result in valuable intellectual property?

Answer. In order for India to be a full partner, the allocation of in-kind hardware contributions was renegotiated among the ITER parties. The European Union, China, Japan, Korea, Russia, and the United States adjusted their high- and lower-tech contributions so that India's allocation would also be such a mix. The United States will still be providing significant amounts of high-tech hardware with the potential to develop valuable intellectual property.

EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH

Question. The Experimental Program to Stimulate Competitive Research (EPSCoR) supports basic research in States that have historically received relatively less Federal research funding, in particular for University research. EPSCoR funding has been flat in recent years, at about $8 million. Under the President's American Competitiveness Initiative, Office of Science funding will double over the next decade.

Do you anticipate that EPSCoR funding will remain a constant fraction of the overall Office of Science budget, as the total budget increases?

Answer. Yes, EPSCoR funding will at a minimum remain a constant fraction of SC budget.

STANDBY SUPPORT FOR NUCLEAR POWER PLANTS

Question. The Energy Policy Act of 2005, Section 638 authorized the Department to implement "risk assurance" as a protection against regulatory delays and litigation. This provision provides a $500 million guarantee for the first two plants.

How does the Department intend to implement this provision?

Answer. Consistent with EPAct, the Department is developing a rulemaking to provide the procedures and process for implementation of the standby support provisions in Section 638, otherwise referred to as Federal risk insurance. The Department is on target to meet the deadlines established in the legislation and to issue the interim final rule by May 6, 2006. The rulemaking is expected be final by the legislative deadline of August 2006.

Question. EPAct authorized the use of both grant funding and loan guarantees, both requiring an appropriation. When will the Department budget funds to support this activity?

Answer. The Department is currently evaluating the timing and appropriate funding from both grant funding and loan guarantees under EPAct.

NUCLEAR POWER R&D

Question. The President has made nuclear power a top priority in this budget providing $250 million toward the GNEP program, which largely funds advanced fuel cycle activities. This large funding commitment seems to contrast with reductions in the Nuclear Power 2010, which seeks to support the deployment of new, safer reactors. It also runs counter to funding increases for the Nuclear Regulatory Commission, which is preparing to review license applications developed under the NP2010 program.

Will the Department be able to fully support all the proposed combined operating license applications with this level of funding?

Answer. Yes. The Nuclear Power 2010 program remains a top Departmental priority. The requested level of funding will fully support the originally planned proposed combined operating license application work scope for fiscal year 2007. The requested funding is based on the scope of the work negotiated with the industry in fiscal year 2005, when the New Plant Licensing Demonstration projects were initiated. The award of the cooperative agreements was later than expected, and there has been a slower-than-expected ramp-up of activities. As a result, the NP2010 program costs have lagged behind our obligated funding resulting in carry over from fiscal year 2005 into this fiscal year. With the unexpected additional appropriations in fiscal year 2006, the NP2010 program anticipates carryover into fiscal year 2007 that combined with the budget request will support the originally-planned work scope.

IMPLEMENTATION OF THE ENERGY POLICY ACT

Question. Mr. Garman, EPAct provided a broad authority to the Department to support R&D, but also sought to support the deployment and technology validation of specific alternative energy such as biomass, clean coal technology, and solar, as well as others. Unfortunately, there are a number of demonstration activities, including Title 15, "Ethanol and Motor Fuels" that didn't receive any funding even though Congress authorized over $800 million for grants and other cost sharing arrangements to encourage the commercialization of biomass conversion technology.

Can you please explain how and when the Department intends to support the Biomass-to-Ethanol programs in Title 15?

Answer. Our biomass program currently supports the goals of Title 15 through investments in advanced technologies that will augment biofuels production at existing corn wet and dry mills. The program also fosters the development of the next generation biorefinery for the production of fuels, power, and commodity chemicals from a wide variety of feedstocks including the conventional grain crops as well as perennial grasses and wood and forest residues.

As noted in the Statement of Administration Policy (SAP) submitted to energy bill conferees on July 17, 2005, "The House and Senate versions of H.R. 6 also include authorization levels that in many cases significantly exceed the President's Budget. These authorizations set unrealistic targets and expectations for future program-funding decisions." House and Senate SAPs contained similar language.

The Department prioritized activities, including those authorized under EPAct, that would most contribute to the goal of reducing America's growing dependence on foreign oil. The 2007 budget reflects the Department's priorities.

Question. Section 942 also provided production incentives for cellulosic biofuels. This activity hasn't been funded either. Can you update me on the status of this provision and if the Department will provide any funding in the near future? Also, is the Department preparing regulations to support this program?

Answer. Section 942 authorizes the Secretary to use a reverse auction to deliver the first billion gallons in annual cellulosic biofuels production by 2015. The use of this authorization is timed to the first year that 100 million gallons of cellulosic biofuels are produced in the United States or in August of 2008. We are reviewing

the requirements for this program and determining what regulations will be required and the schedule for such requirements.

CLEAN COAL POWER INITIATIVE

Question. The budget provides just $5 million toward the Clean Coal Power Initiative, down $45 million from the current year levels. This program supports the deployment of clean coal technology including Integrated Gasification Combine Cycle (IGCC) facilities, which have the potential to significantly reduce greenhouse gas emissions. Historically, the Department wouldn't go forward with a technology solicitation without having secured at least $200 million. At this point, there is roughly $50 million available for fiscal year 2006.

What is the rationale for cutting clean coal research at this point?

Answer. The fiscal year 2007 funding request of $5 million will be combined with that from prior appropriations and will go towards the accumulation of funds for a future CCPI solicitation. In addition, if other clean coal projects do not go forward, then any additional funding that becomes available will also be applied towards a future CCPI solicitation. Ongoing CCPI projects, FutureGen, and various tax incentives including those authorized in the Energy Policy Act of 2005 continue to provide incentives for demonstration and deployment of clean coal technologies with the potential to significantly reduce greenhouse gas emissions.

The budget reduces the addition of new funds to CCPI, so that the program can take steps to improve the use of funds already provided for projects. As identified in the Program Assessment Rating Tool (PART) review, delays in CCPI ongoing projects and selected projects still in negotiation have contributed to high unobligated balances, currently over $500 million. This is partially a result of lengthy negotiations due to the complexity of the projects and statutory requirements to provide full funding to projects. In addition, extended negotiations over contract terms, private sector difficulty securing adequate financing for their cost share, private sector difficulty obtaining permits, and other issues have led to significant unobligated balances tied to projects or independent components of projects that were selected several years ago and have not begun construction.

Although some degree of unobligated balances are expected, and in fact necessary, for forward funded, large scale, long duration, demonstration projects, the program also sees unobligated balances tied up in projects that are not moving forward to achieve CCPI's goals expeditiously and are delaying the benefit of funds appropriated for CPPI. The program is working to reduce the time between selection and award for projects that are being negotiated for initiation, and the time for those projects already awarded but requiring negotiated agreements to go to the next budget phase for which funding will be obligated. The goal of these improvements in the CCPI process is to ensure that projects progress to commencement of construction in a timely manner and strengthen the Department's ability to withdraw funding from stalled projects. If a project does not go forward or continue to the next budget phase, the available funds will be put towards a future CCPI solicitation. The program is also working to develop processes to ensure consistency of project selection with the R&D Investment Criteria and improve contract and project management controls to achieve the desired results.

Question. When do you envision the next technology solicitation?

Answer. The fiscal year 2007 request for the Clean Coal Power Initiative (CCPI) of $5 million, along with funds from the prior appropriations, will make available approximately $80 million that could go towards the accumulation of funds for a future CCPI solicitation. In addition, if other clean coal projects do not go forward, then any additional prior year clean coal funding that becomes available will also be applied towards the funding for a future CCPI solicitation. The decision of when to issue a CCPI solicitation will be made in the context of annual budget formulation and will be influenced by steps the program is currently taking to improve the use of funds already provided for projects and availability of prior year funds from projects that may not go forward.

Question. The Secretary has previously testified that there is a large amount of uncommitted funds within this account—can you please provide more specific details of this funding and if any of those funds can be rescinded?

Answer. By uncommitted funds the reference is to the fact that the funds have not yet been obligated for some of the competitively selected projects. When funds are obligated, they are committed to a particular contract. However, there is a commitment to fund those selected projects that currently are in negotiations to either be awarded for start-up or to continue to the next budget phase. Obligations of funds to the projects are done on a budget phase basis after the project has been

negotiated and awarded. As such there is a funding commitment, but not a contractual funding obligation, tied to the projects.

Lengthy negotiations due to the complexity of the projects, statutory requirements to provide full funding to projects, and long lead time acquisition of components have resulted in approximately $480 million in unobligated balances for projects in CCPI and its predecessor programs (Power Plant Improvement Initiative and Clean Coal Technology Demonstration Program) that were awarded in the last 2 years and have not yet started and projects that were awarded up to 3 years ago and are currently making progress towards construction or are under construction. In addition, extended negotiations over contract terms, private sector difficulty securing adequate financing for their cost-share, private sector difficulty obtaining permits, and other issues have led to approximately $195 million in unobligated balances for projects or independent components of projects that were awarded 3, 4, and 13 years ago, and have not yet started. If for some reason, a project does not go forward, the funding would be made available for a future CCPI solicitation.

GNEP

Question. Secretary Garman, as I have stated previously, I am very encouraged by the Department's new energy initiatives, especially the Global Nuclear Energy Partnership (GNEP). This is an ambitious program that will have significant impacts on the energy security of the Nation. Over the years the DOE has invested in nuclear research that can have a direct impact on new nuclear fuels and solve the problem of large volumes of nuclear waste that could contribute to the proliferation of nuclear weapons.

I am anxious to see the next level of detail from the Department on how the funds will be spent in fiscal year 2007, in particular what roles will be assigned to what national laboratories.

Can you tell me how DOE and GNEP will tap into the expertise resident in the NNSA laboratories and when this committee should expect to see the details of the work distribution?

Answer. While Idaho National Laboratory currently is the lead laboratory for the advanced Fuel Cycle Initiative, the participation by and capabilities of all of DOE's national laboratories will be critical to the success of GNEP. The seven national laboratories—Argonne, Los Alamos, Lawrence Livermore, Sandia, Oak Ridge, Pacific Northwest, and Idaho—have provided input into the Department's development of and vision for GNEP. These seven national laboratories are also currently involved in the preparation of more detailed work scope and funding requirements. The details of the work distribution would be available to the committee after careful consideration and approval by DOE. NNSA, and its laboratories, are integral to the GNEP effort and are engaged specifically in the areas of advanced safeguards and non-proliferation.

FOSSIL ENERGY BUDGET

Question. In your budget justification, the Department supports the FutureGen program to build a cost-effective near-zero atmospheric emissions from coal with the assumption that "the successful and timely achievement of the Fossil Energy R&D objectives" and the availability of technologies for are integrated into FutureGen. However, the budget has proposed to nearly eliminate funding under the Clean Coal Power Initiative—the driver for technology development.

How can the Department hope to build a state-of-the-art facility using yet to be developed technology when you won't commit the resources to develop such technologies?

Answer. The fiscal year 2007 budget request represents the necessary funding to develop the technologies arising from our coal research program for FutureGen and near-zero emission coal technologies in general. We believe that the funding level is sufficient to advance these technologies to the level of maturity and acceptable risk for integrated testing in FutureGen. The Clean Coal Power Initiative (CCPI) funding is focused on more mature technologies that are ready for demonstration prior to commercial deployment. The CCPI, however, does reduce the risk of the longer range commercial deployment of future near-zero emission plants based on FutureGen technology by reducing risks in technologies and operations that would have been demonstrated in CCPI such as Integrated Gasification Combined Cycle.

CLEAN COAL POWER INITIATIVE—USE OF CARRYOVER BALANCES

Question. The DOE 5-year budget justification claims that the Department will provide out-year funding for Clean Coal Power Initiative (CCPI) demonstration of

advanced coal technologies, "contingent upon improvement of use of funds already provided for projects."

What exactly does the Department expect in terms of "improvement of use of funds" that will support future appropriations to the Department's leading coal R&D program?

Answer. The program is working to reduce the time between project selection and award as well as the negotiating time for ongoing projects to proceed to the next budget phase, ensure that projects progress to commencement of construction in a timely manner, strengthen the Department's ability to withdraw funding from stalled projects, ensure project selection consistency with the R&D Investment Criteria, and improve contract and project management controls to achieve the desired results.

Question. If the Department is dissatisfied with the performance of the existing competitively-awarded clean coal projects, what do you intend to do to improve performance of the projects?

Answer. As identified in the Program Assessment Rating Tool (PART) review, project delays in CCPI have resulted in high unobligated balances, currently over $500 million. This is partially a result of lengthy negotiations due to the complexity of the projects, and statutory requirements to have available full funding for these projects. In addition, extended negotiations over contract terms, private sector difficulty securing adequate financing for their cost share, private sector difficulty obtaining permits, and other issues have contributed to the unobligated balances situation for projects or independent components of projects that were selected several years ago and have not begun construction.

The issue is two-fold. First, these are complex project agreements to negotiate and frequently require the industrial participant to obtain items such as power purchase agreements that the participant must separately negotiate before coming to closure on the cooperative agreement with the Department. Secondarily, the projects that have been awarded are commercial demonstrations and therefore are also susceptible post-award to changes in market conditions which could result in loss of power purchase agreements or technology development risks, which in turn lead to delays.

The Department is aiming to improve the process and minimize the disruptions and delays due to changing market conditions by better anticipating possible market impacts and addressing them earlier in the negotiation process. The Department is also developing contract provisions and other process improvements that strengthen the Department's ability to withdraw funding from stalled projects. Project selection will be improved by ensuring consistency of the selection process with the R&D Investment Criteria.

If for some reason a Clean Coal Power Initiative (CCPI) project that was competitively awarded does not progress satisfactorily to the next phase because of either not meeting the milestones, or incurs inordinate delays, then the Department will to the extent possible assist the project participant in overcoming hurdles to move a project forward. If these obstacles cannot be resolved, the Department will pursue a mutual agreement or exercise other contractual provisions to terminate the project, and make the remaining funds available for a future CCPI solicitation.

The Department is also working to improve contract management processes in response to GAO and DOE Inspector General reports identifying weaknesses.

Question. Does the Department have any plans to re-compete any of the existing awards? If so, which one?

Answer. The Department does not plan to re-compete any of the existing awards. In the case when a project is terminated, the available funds will go towards a future CCPI solicitation.

HYDROGEN

Question. Secretary Garman, I have been pleased to see the significant developments made at our national labs in the area of hydrogen fuel cells. Los Alamos National Laboratory in particular has been a leader in this area. The Department has developed an excellent roadmap leading to the introduction of hydrogen fuel cells.

In your view are you receiving adequate resources to move to the next level in your roadmap?

Answer. Yes, the administration's funding request is sufficient to keep the hydrogen program on track to develop the critical technologies that will enable industry to make a commercialization decision in 2015 on hydrogen fuel cell vehicles and the infrastructure to refuel them.

NEXT GENERATION NUCLEAR PLANT

Question. Despite the significant support for the GNEP program, I question whether or not the Department is as serious about the Next Generation Nuclear Plant that will also support the President Nuclear Hydrogen Initiative.

When does the Department intend to begin construction on the Next Generation Nuclear Plant?

Answer. The Department is committed to meeting the Energy Policy Act requirements for the Next Generation Nuclear Plant. A wide spectrum of R&D activities is underway focusing on development of nuclear fuels, metallic and graphite materials capable of high-temperature service, and analytical methods to be used in assessing reactor system safety and performance. The R&D program will inform a decision by 2011 to proceed with the design competition for the NGNP as mandated by EPAct. The design competition is expected to take 2 years. A decision to construct would be expected to follow completion of final design activities. The Department is working with the Nuclear Regulatory Commission on a licensing strategy for the NGNP.

Question. Without this plant, how will the Department validate the Nuclear Hydrogen Initiative, much less develop hydrogen from non-fossil sources such as natural gas?

Answer. The Department is currently developing two systems of hydrogen production (thermochemical cycles and high-temperature electrolysis) using nuclear energy. Prototype testing of these processes are planned using non-nuclear heat sources. The results from the prototype tests will be used to guide the design of the engineering-scale facility to be coupled with the NGNP. While the NGNP would be capable of driving either of these systems, research is being conducted to lower the process heat requirements to reduce the technical risks associated with the very high operating temperatures of the NGNP.

URANIUM SUPPLY

Question. Congress and the Bush Administration are encouraging the development of additional nuclear powerplants. Other nations are also aggressively pursuing the construction of new nuclear reactors. This is going to require more uranium to fuel our current and new reactors.

Has DOE done any analysis on the availability of uranium inside the United States for nuclear power reactors over the next decade?

Answer. The Department has analyzed a number of commercially-available reports on the quantity and quality of domestic uranium reserves and resources that could be developed over the next decade. We would be happy to provide you with a briefing if you would like.

BARTER OF URANIUM

Question. This subcommittee in the fiscal year 2006 Energy and Water Appropriations conference report directed DOE to follow government procurement procedures in any sales or bartering of DOE uranium inventories.

Does DOE believe it is required to follow this directive?

Answer. The Department has fully complied with the Section 314 of the fiscal year 2006 Energy and Water Development Appropriations Act including the provision that "applicable" procurement laws and regulations be followed. Because a sale, transfer or barter is not considered a "procurement," provisions of the Competition in Contracting Act and the Federal Procurement Regulations are not applicable. Nevertheless, DOE documented its justification for the initial transfer of uranium to USEC for competitive sale as if those provisions applied. This transfer of a small amount of uranium to USEC (200 metric tons) was necessary to secure funding for USEC's continuation of the uranium remediation activities with no disruption. DOE recently conducted a competitive sale for 200 metric tons.

Question. What has DOE done to follow this directive?

Answer. The Department issued a Request for Proposals which closed this month for the Department's sale of 200 metric tons.

AMERICAN CENTRIFUGE PROGRAM—USEC

Question. The Department has transferred the technology for the American Centrifuge Program to USEC, Inc. to commercialize. As part of the June 2002 agreement between DOE and USEC, there are a number of milestones that USEC is required to meet this summer and fall. There is concern since USEC's NRC license application appears to be delayed.

Have you been briefed on the technology development program and do you believe that this technology is workable and is commercially viable at full scale?

Answer. The Department is monitoring USEC's activities toward meeting its obligations under the June 2002 Agreement with DOE. We receive regular reports on the status of USEC's research and development program. The technology was proven in the government's program in the 1980's. The Department believes that the market will decide if American Centrifuge Program is commercially viable.

Question. Are there any specific technical concerns you may have regarding the deployment of this technology? Are you confident that this project is well managed and following appropriate scientific practices to validate this technology?

Answer. DOE is not in a position to assess the USEC practices since this is a not a government-directed program.

URANIUM INVENTORY

Question. Given the increased national interest in nuclear power, the key role that fuel supply policy will play going forward and the increased interest by this subcommittee in DOE uranium inventory management, this seems to me to be the wrong time to remove these issues from DOE HQ and place them in a group whose experience is primarily in selling assets.

I would feel much better knowing that these crucial functions, if they are to be transferred from the Office of Nuclear Energy, be transferred to your office, Mr. Under Secretary.

Will you give this serious consideration and report back on the decision to the subcommittee?

Answer. No decision has been made on transferring the functions. That said, these functions currently report to my office through the Office of Nuclear Energy. Should the Department conclude that it is more effective to transfer the functions, they likely would remain within my purview. I will keep the subcommittee apprized as we consider this issue.

URANIUM MINING

Question. Domestic producers of uranium recently wrote Secretary Bodman and urged the DOE to maintain its uranium inventories for a possible shortfall between supply and consumption that they believe will grow annually over the next decade.

Did the Department meet with the domestic producers to address their concerns?

Answer. Prior to receiving their letter, the Office of Nuclear Energy staff met with the Uranium Producers of America. We believed that we addressed their concerns. More recently, Assistant Secretary Dennis Spurgeon met with several uranium companies this month to discuss their concerns.

Question. What was DOE's response to this issue?

Answer. The Department closely monitors activities in the nuclear fuel market for any potential major disruption of fuel supply to our Nation's commercial nuclear power reactors and has a designated uranium inventory to ensure the reliability of deliveries under the Highly Enriched Uranium Purchase Agreement with the Russian Federation.

As part of a March 1999 Agreement concerning the transfer of source material to the Russian Federation, DOE agreed to maintain a stock for 10 years of no less than 22,000 metric tons of natural uranium equivalent. The Agreement states that "the stock may be reduced, through the withdrawal of uranium, in order to ensure the reliability of deliveries under the Commercial Agreement." DOE continues to maintain this stock.

Question. Has DOE made any effort to encourage new domestic uranium production?

Answer. We believe that market forces (the current price as of April 10 is $41.00/lb.) will stimulate new domestic production.

WIND ENERGY

Question. In the fiscal year 2006 Energy and Water Conference Report, the Department was instructed to shift responsibility for the integration of renewable technology to the Office of Electricity Delivery and Energy Reliability. However, your budget provides nearly $8 million in funding for program staff to interface with FERC, regional transmission organizations, independent system operators and State regulators.

Do you believe that the wind program staff is better able to perform this function than the staff of the Electricity Delivery and Reliability Office? If so, why have we bothered to establish the Office of Electricity Delivery and Reliability?

Answer. Senior staff from the Office of Energy Efficiency and Renewable Energy (EERE) and the Office of Electricity Delivery and Energy Reliability (OE), met May 16, 2006 to examine coordination between offices, and the appropriate roles and responsibilities between them. Our two offices have jointly decided to establish a formal working partnership for coordinating the work on wind and electricity systems integration.

Of the requested $8 million in fiscal year 2007, the majority of funds will be used to characterize wind, turbine operations, plant behavior and interconnection electronics, with $3.97 million devoted to Systems Integration. Of the Systems Integration total, $500,000 is planned for interfacing with FERC, regional transmission organizations, independent system operators and State regulators of which OE will serve as the lead DOE organization.

Question. Has the Department committed funds within the wind energy program to support integration activities in fiscal year 2006—is the Electricity and Reliability Office involved?

Answer. Yes, the Department has committed $2.4 million in fiscal year 2006 for system integration activities in the Wind Technology Program and program staff interacts on an ongoing basis with colleagues in the Office of Electricity Delivery and Energy Reliability (OE). Wind Program management recently discussed with OE the wind program vision for improved grid availability, as well as the role of expected wind development in the National Interest Electric Transmission Corridor Study under Section 1221 of EPAct. EERE continues to closely coordinate all its electricity-related actions with OE.

SOLAR AMERICA INITIATIVE

Question. The President has proposed the Solar America Initiative to achieve market competitiveness of solar electricity by 2015 instead of 2020. This program appears to shift from a demonstration approach to that of a technology development program with industry.

Which technologies will the Department focus on and which have the greatest opportunities to meet the 2015 goal?

Answer. To meet its 2015 goals, the Solar America Initiative (SAI) will support R&D and manufacturing improvements through industry-led partnerships to reduce the cost of solar electric systems and optimize system performance. The R&D work will be complemented by a technology acceptance effort to help overcome the non-R&D barriers to commercialization of solar electric systems. SAI focuses work on both photovoltaics such as thin-film and multi-junction photovoltaics, but also supports concentrating solar power (CSP) technologies such as dishes and parabolic collectors.

Question. What technology developments have occurred that led the Department to believe that it could make solar energy cost competitive 5 years ahead of schedule?

Answer. The Department believes that the cost competitiveness of solar energy can be accelerated by focusing on the transfer of demonstrated high-efficiency cells from the laboratory, to large scale industrial production through public-private collaboration with industry-led "Technology Pathway Partnerships". We also believe that our increased funding request will accelerate the pace at which we will achieve results that can lower costs.

HYDROGEN COMPETITIVENESS

Question. The President established the Hydrogen Fuel Initiative to develop a hydrogen economy. One goal was to cut the production and delivery cost of hydrogen in half by 2010.

How successful has the Department been in achieving this goal?

Answer. Significant progress has been made in reducing the cost of hydrogen. For example, the cost of distributed hydrogen production from natural gas has fallen from $5.00/gallon of gasoline equivalent (gge) in 2003 to a current cost of about $3.10/gge. This cost is estimated using an economic model developed by the National Renewable Energy Laboratory and industry partners. Additionally, an independent panel has been commissioned to verify that our 2005 target of $3.00/gge has been met.

These analysis activities use the Energy Information Administration (EIA) High A price projections for natural gas, which are typically less than today's market price. Therefore, the Department will continue to evaluate the effect of natural gas price volatility on the viability of this hydrogen pathway to compete with conventional fuels such as gasoline.

Question. What about achieving the stated goals for reducing the cost of renewable production (distributed) sources?

Answer. The Department believes that renewable hydrogen production pathways are critical to the long-term success of the President's Hydrogen Fuel Initiative to reduce our dependence on foreign oil and to reduce greenhouse gas and criteria emissions. Multiple renewable hydrogen production pathways are being pursued, including biomass gasification/reforming, renewable fuel reforming, photoelectrochemical, photobiological, solar high-temperature thermochemical, and water electrolysis using renewable electricity resources.

Because appropriations have fallen short of request levels and Congressionally-directed projects consumed a significant portion of the budget in fiscal year 2005 and fiscal year 2006, the Department had to prioritize funding for its proposed projects. The Department chose to focus on distributed natural gas technologies that would most likely help to achieve the 2015 technology readiness milestone. Funding for hydrogen production projects on electrolysis and distributed reforming of renewable liquids was reduced, while funding for other longer-term renewable technologies was eliminated (total funding of renewable hydrogen production was reduced from a planned level of approximately $24 million to $13.1 million). Therefore, progress on the cost reduction of many renewable hydrogen production technologies has been limited. For example, cost of hydrogen from renewable bio-liquids in 2003 was $6.70/gallon of gasoline equivalent and has not fallen appreciably toward our 2015 target of $2.50/gallon of gasoline equivalent. The President's fiscal year 2007 budget request includes funding for renewable hydrogen projects.

HYDROGEN MANUFACTURING

Question. For the first time in the past 2 years the Department has provided funding for manufacturing R&D within the hydrogen account.

What type of R&D is being proposed? Who will perform this activity?

Answer. On January 24, 2006, Secretary Bodman released a "Roadmap on Manufacturing R&D for the Hydrogen Economy" for public comment. This roadmap, developed with interagency and industry input, identifies future high-priority manufacturing needs (automated/agile processing, high speed forming/molding, joining technology, non-destructive inspection techniques, etc.) in polymer electrolyte membrane fuel cells, high pressure composite storage tanks, and fuel reformers and electrolyzers for producing hydrogen.

Based on further industry comments, due April 24, 2006, the Department will update the roadmap and establish priorities for an upcoming solicitation. The organizations performing the new manufacturing research will be competitively selected. Teams could include industry, national laboratories, and university partners.

HYDROGEN AND FUEL CELL PROGRAM

Question. One of the major elements of the bill (Title 8) was a roadmap that included revised funding and milestones for development of hydrogen and fuel cells under the FreedomCAR and Fuel Partnership. The provisions are the result of extensive collaboration between the hydrogen and fuel stakeholders and policy makers in which the research and development needs of DOE and the participating industries were extensively re-evaluated. Title VIII reflects what Congress determined will be needed to meet the President's 2010 and 2015 goals for hydrogen powered fuel cell vehicles.

Can you discuss how the statutory directives of EPAct 2005 figured in the fiscal year 2007 budget request? Can you tell me how DOE plans to meet the law's goals?

Answer. The President's fiscal year 2007 budget request of $289.5 million for the Hydrogen Fuel Initiative is consistent with Title VIII of the Energy Policy Act of 2005.

In particular, the Department's multi-year planning drove the budget request which fully supports the statutory timeline and goals related to vehicles and infrastructure stipulated in Section 805. We plan to meet these goals through research partnerships with industry technology developers, national labs, and universities. The majority of funding will remain focused on research to help achieve cost and performance targets, in accordance with the administration's R&D investment criteria. Limited learning demonstrations covering multiple applications will be used to refocus research and to periodically validate progress.

BIOMASS

Question. The Department has requested a significant increase in the Biomass program, including substantial increases in funding for thermochemical platform R&D and biochemical platform R&D.

Which of these technologies has the greatest potential to reduce the costs of biomass production?

Answer. It's difficult to answer this question with any degree of certainty at this time. There are a wide variety of feedstocks that can be converted to ethanol, and different feedstocks are available in different regions of the country. Ultimately, the most economic conversion technology—the biochemical (fermentation) or the thermochemical (gasification and pyrolysis)—may depend on the feedstock used.

STRATEGIC PETROLEUM RESERVES

Question. The fiscal year 2007 budget doesn't request any additional funding to make repairs to the Strategic Petroleum Reserve after a direct hit by Hurricane Katrina.

Is it fair to say that the SPR handled oil supply shortages in the Gulf region using already allocated funds?

Answer. The SPR had sufficient funds to repair the minor damage that was caused by Hurricane Katrina. The damage included roofing, fencing and damaged trailers. The total cost of repairs was less than $1 million and was covered by our fiscal year 2006 appropriation.

HURRICANE KATRINA DISASTER RECOVERY

Question. In the wake of Hurricane Katrina, you have created a program within Building Technologies called, "Disaster Recovery and Building Reconstruction."

Could you please expand upon this program and specify how it will help in the rebuilding of the Gulf Coast?

Answer. In November 2005, the Department launched its Disaster Recovery and Building Reconstruction web site (www.eere.energy.gov/buildings), providing building resources, lessons learned from past disasters, and a calendar of workshops and training sessions being conducted throughout the Gulf region. This is not a new program as such, but rather a compilation of our existing efforts and partnerships applicable to rebuilding the Gulf region. We also continue to work with State energy offices, universities, and businesses in the affected States to encourage a broad regional exchange of information and best practices on energy efficient building technologies.

KATRINA—EPACT

Question. The tragedy of Hurricane Katrina presents a unique situation in which thousands of buildings and homes need rebuilding. In addition the Energy Policy Act provided the Department with additional authorities to establish in the Energy Policy Act. Sections 126 and 140 both authorize the Department to establish programs to facilitate energy efficiency and the integration on renewable energy technology. Obviously, the Gulf Coast region provides a great opportunity for the Department to develop these pilot programs.

Has the Department taken any steps to help the disaster recovery by promoting or encouraging the use of energy efficient building materials?

Answer. Yes, the Department is actively working with universities, extension services, builders, and building materials suppliers to encourage the use of energy efficient practices and energy efficient building materials. For example, the Department is partnering with The Home Depot, the Department of Housing and Urban Development, and State energy offices on a series of weekend training sessions on how to repair storm-damaged homes using energy efficient products and practices. Training sessions were held in New Orleans, Louisiana on January 22–23, Biloxi, Mississippi on January 28–29, and in Mobile, Alabama on February 4. These events attracted over 2,000 attendees. We are working closely with The Home Depot and other retailers to design a series of on-going events in the spring and summer to prepare for the upcoming hurricane season.

WEATHERIZATION PROGRAM

Question. The Department has proposed cuts to cut the Weatherization Assistance Program by $77 million. This will impact 33,000 families who will pay an estimated $200 million in heating and cooling assistance if they don't receive this aid.

At a time when home energy bills are very high and there are a large number of people in the Gulf States who will be struggling to pay their bills this year, why did you decide to cut money from these grants?

Answer. From 2002 through 2006, the administration requested a total of $1.359 billion for the Weatherization Program, nearly doubling the baseline funding assumptions (using 2001 appropriations). Unfortunately, Congressional appropriations

from 2002 through 2006 fell short of the administration's requests by a cumulative total of $208 million. Nevertheless, increased appropriations driven by the President's 2002 through 2006 budgets led to energy and cost savings for hundreds of thousands of the neediest low-income families.

The administration made very difficult choices in developing the fiscal year 2007 budget. Reducing America's growing dependence on foreign oil and changing how we power our homes and businesses are among the Department's highest priorities, as outlined in the President's Advanced Energy Initiative.

The Department's benefits models indicate that the Weatherization Program does not provide significant energy benefits compared to the potential benefits of other programs where we are increasing our investments.

We note that financial aid for helping low-income families pay their energy bill is provided by the Department of Health and Human Service's Low Income Home Energy Assistance Program (LIHEAP).

PHOTOVOLTAIC ENERGY COMMERCIALIZATION PROGRAM

Question. The Energy Policy Act of 2005 created the "Photovoltaic Energy Commercialization Program," which aims to establish photovoltaic solar electric systems for electric production in public buildings. The request for photovoltaic energy systems is up more than 50 percent from fiscal year 2006.

Is this effort to increase the use of solar power in public buildings included in the President's Solar America Initiative? In what other ways is the Solar America Initiative planning to use the requested $65 million plus up from fiscal year 2006?

Answer. The "Photovoltaic Energy Commercialization Program" contained in Section 204 of the Energy Policy Act of 2005 is not part of the President's Solar America Initiative (SAI). Section 204 authorizes the Administrator of the General Services Administration (GSA) to establish a photovoltaic (PV) commercialization program. The Department is willing to provide technical assistance to GSA, should GSA decide to implement such a program.

The additional funding that the Department of Energy is requesting in fiscal year 2007 for the Solar America Initiative is to achieve the goal of cost-competitive (currently estimated at 5 to 10 cents per kilowatt-hour) solar power by 2015. The majority of requested SAI funds will be used to support a competitive solicitation for industry-led R&D to reduce costs along multiple photovoltaic technologies, some of which may be down-selected in future years. Ultimately, we aim to have partners demonstrate the ability to produce fully-integrated cost-competitive photovoltaic systems optimized for U.S. markets by 2015. In addition, the Department is also planning to issue a second, smaller competitive solicitation in the area of solar technology acceptance that may include funding for technology assistance to promote the commercialization of photovoltaic systems in public buildings. The Department is in the process of developing its strategy for this technology acceptance solicitation, and will seek public feedback shortly to help inform the structure and content of the solicitation.

OFF-SHORE WIND ENERGY DEVELOPMENT

Question. As part of the Energy Policy Act, Congress streamlined the permitting process and jurisdictional confusion regarding the permitting of offshore renewable energy projects, which have been a barrier to development. Several offshore wind projects have been announced, but none of the projects have been developed. In addition the Department has announced that it will support an offshore wind demonstration.

What is the status of the regulatory reform process and are you confident that this will result in an efficient and streamlined permitting process?

Answer. The Energy Policy Act of 2005 outlined a path to develop new regulations to manage the approval process for offshore wind and other renewable energy projects on the Outer Continental Shelf (OCS) and assigned the Department of the Interior's Minerals Management Service (MMS) as the lead agency. There are no interim policies or guidelines; however, MMS issued an Advanced Notice of Proposed Rulemaking to solicit comments from stakeholders in developing the language for the new regulations. The Department of Energy's Office of Wind and Hydropower Technologies Program will continue providing technical and other assistance to MMS under a soon-to-be-finalized Memorandum of Agreement related to offshore wind energy issues.

Question. How many wind projects have been announced or are under consideration? How many megawatts of fossil energy will these projects displace and by when?

Answer. Several offshore wind projects have been announced, although only two have taken formal steps required to begin the regulatory review process required for sites in Federal waters. The two commercial projects include the Cape Wind Project (420 megawatts), and the Long Island Power Authority/FPL Energy project (143 megawatts). The wind generated power from these projects would likely displace oil and natural gas-fired peaking powerplants.

Question. How many megawatts of energy could the United States expect to produce from offshore wind?

Answer. Preliminary estimates conducted at the National Renewable Energy Laboratory (NREL) indicate that more than 1,000 gigawatts of offshore wind energy potential exist in the United States between 5 and 50 nautical miles off the coastlines, including the Great Lakes, with approximately 810 gigawatts over waters that are 30 m and deeper (Future of Offshore Wind Energy in the United States, June 2004; www.nrel.gov/docs/fy04osti/36313.pdf). Realizing even a fraction of this presents major economic, technical, and social challenges.

AMERICAN CENTRIFUGE PROJECT

Question. As you know, the Department of Energy signed in 2002 a lease agreement with the United States Enrichment Corporation (USEC) for centrifuge technology. Currently, USEC is planning on constructing the American Centrifuge Plant (ACP) based upon a former DOE design that was never fully proven. History tells us that DOE spent more than two decades and $3 billion on centrifuge technology.

What compensation did the Federal Government receive for this technology transfer?

Answer. To obtain access to the restricted data related to the gas centrifuge enrichment process, identified at 10 C.F.R. 725.31 Appendix A as category C–24 isotope separation. USEC was required by regulation to pay, and did pay, $25,000. USEC also is fully funding development activities under the Cooperative Research and Development Agreement (CRADA) with the Oak Ridge National Laboratory. Finally, the Department is currently negotiating, but has not yet executed, a technology licensing agreement with USEC that addresses royalty payments for USEC's commercialization of DOE centrifuge technology.

Question. Is the Federal Government liable should the technology prove unworkable?

Answer. No.

Question. Does DOE currently have departmental personnel working on this project?

Answer. Since USEC's CRADA is with ORNL, there are some laboratory personnel working on the project. USEC pays 100 percent of the costs under the CRADA. Some DOE employees provide the required regulatory oversight.

Question. At what stage in machine development is USEC?

Answer. Because USEC is a private company and the technology development program is privately funded, its detailed development information is considered business proprietary to USEC and may be subject to protections under the Trade Secrets Act. Under this Act, DOE is obliged to take measures to protect such business proprietary information from public disclosure. In response to the committee's request for business proprietary information in its oversight capacity, the Department will provide the information requested in the Department's possession under separate cover in a secure fashion in accordance with applicable law and the Department's procedures.

Question. Are individual prototype machines still being tested as reported in November 2005? What is the DOE's level of participation?

Answer. As noted previously, this information is business proprietary to USEC. As a result, a response will be provided under separate cover. DOE provides regulatory oversight to ensure that industrial safety and environmental requirements are met.

Question. What does prototype machine testing by USEC actually mean and involve? What is the DOE's level of participation?

Answer. As noted previously this information is business proprietary to USEC. As a result, a response will be provided under separate cover. DOE is involved in a regulatory capacity to ensure that industrial safety and environmental requirements are met.

Question. Is there any chance that the reliability and performance data will not be ready for the DOE October Milestone?

Answer. The Department is not in a position to respond to this question.

Question. Will the October data include economic performance data? If not, when will such data be available?

Answer. The Department is not in a position to respond to this question.

Question. Will economic data be proven for financing commitments to be obtained by January 2007 for the 1 million SWU plant?

Answer. The Department is not in a position to respond to this question.

Question. If "cast-iron" economic data is not available by January 2007, how can construction begin to meet the DOE June 2007 Milestone?

Answer. The June 2007 construction milestone is tied to a licensing decision by the Nuclear Regulatory Commission which is required before USEC can begin construction. The economic data requirement is an for USEC to resolve.

Question. Is there a "fall-back" strategy in the event that the ACP cannot be developed as a commercially viable economic option in accord with the DOE June 2002 Agreement?

Answer. The Department is not currently evaluating alternatives to the APC option.

Question. Are real and proven alternative production technology options being investigated, other than continued and indefinite operation of the Paducah Gaseous Diffusion Plant?

Answer. The Department is closely following developments in the domestic enrichment marketplace including the proposed LES centrifuge plant plans in New Mexico. We believe that market forces will work to provide sufficient domestic capacity to meet U.S. utility requirements.

RECLASSIFYING WASTE AT HANFORD, WASHINGTON

Question. Mr. Rispoli, the Congress reclassified certain waste as being "incidental to reprocessing" and as a result, this would allow the Department to leave a small amount of material in the tanks that would be filled with grout to permanently immobilize any remaining waste. This is the standard being applied to cleanup at Idaho and Savannah River. I am told that applying this same authority to the Hanford tank farm has the potential to save between $10–$15 billion.

If this authority was extended to Hanford, can you estimate the budgetary impact would be for this project? How much time could be saved?

Answer. The Department of Energy (DOE) committed during the debate on section 3116 of the National Defense Authorization bill that we would not work unilaterally to add another State to the reclassification authorization. That being said, DOE has not completed an analysis to determine how much time or money could be saved should this authority be extended to Washington State.

Question. Does the Department believe this standard should be applied to the Hanford tank farm cleanup?

Answer. The Department of Energy (DOE) has discussed with State of Washington officials on several occasions the benefits it perceives that application of section 3116 would offer to the citizens of the State of Washington. These benefits include a provision for the U.S. Nuclear Regulatory Commission's consultation and monitoring, and the certainty concerning the process to be used in making determinations. However, the DOE committed during the debate on section 3116 of the National Defense Authorization bill that we would not work unilaterally to add another State to the reclassification authorization. That being said, DOE has not completed an analysis to determine how much time or money could be saved should this authority be extended to the State of Washington.

HANFORD CLEANUP—FAVORITE AMONG EQUALS

Question. The Environmental Cleanup budget is down by over $762 million. Funding for cleanup at virtually every site in the complex is down. Los Alamos has been reduced by over $50 million; Idaho is down $20 million; Savannah River is down by $94 million. In contrast, funding for Hanford is up, despite the fact that we still don't have a clear idea how much the Waste Treatment Facility will cost.

We do know that Bechtel, the current contractor, estimates it will cost over $11 billion. This is up from the original cost estimate of $4.3 billion in 2000.

In the 2006 budget request, the Department predicted with 80 percent certainty that the cost of the project would be $5.8 billion and be completed by 2011. This is incredible to me that in 1 year the cost of the project could go from $5.8 billion to $11 billion.

It appears that everything that could go wrong with this project has gone wrong. There has been tremendous technical risk, poor engineering and design management, and regulatory uncertainty as a result of the Defense Nuclear Facilities Safety Board.

Mr. Garman, when will you have a better sense of the final cost estimate for the Waste Treatment Project?

Answer. In December 2005, the Department of Energy directed the Waste Treatment and Immobilization Plant (WTP) prime contractor, Bechtel National Inc., to deliver an updated Estimate-At-Completion (EAC) to reflect available funding for fiscal year 2006 and impacts of the results of the independent technical and cost reviews by May 31, 2006.

DOE has engaged the U.S. Army Corps of Engineers to perform an independent expert review of the EAC and to validate the EAC. The USACE has retained a number of recognized industry experts working with its own senior staff to perform this review. The USACE's report is scheduled to be completed by late summer 2006. Once the EAC is validated by the USACE, DOE would then validate and approve the baseline for the WTP project.

Question. What can and will be been done to get control of this project and to reverse the cost increases?

Answer. I think it is important to note that all prior planned designs for the Waste Treatment and Immobilization Plant (WTP) were based on a plant capable of treating and immobilizing only one-fourth of the high-level waste at the Hanford site. The current plant is sized to treat and immobilize 100 percent of the high-level waste, thus eliminating the need for a second, very sizeable and costly plant that the Department of Energy's (DOE's) prior plan had envisioned. In addition, since this project first got underway in the late 1990's, major advancements in technology have been recognized that will improve WTP performance. These advancements include: development of an ion exchange material to more effectively and less expensively remove radioactive cesium from tank waste liquids; improvement of throughput capacities for the furnaces used to vitrify the radioactive waste; and enhanced blending ability of pumps to maintain a consistent waste mix. We anticipate that benefits from these improvements will avoid the necessity of building a second plant for high-level waste, improve turnaround time, reduce personnel exposure, reduce performance risk and operating cost, and reduce the total number of canisters produced, thereby decreasing the volume of material ultimately sent to a repository for permanent disposal.

On June 23, 2005, the Secretary of Energy made key decisions to address the WTP project scope, cost, schedule, contract, and management issues. The management actions included direction to: (1) conduct an After Action Review to assess the causes of the project cost, schedule, scope and project management issues, (2) assemble a new DOE Headquarters senior level management team, (3) submit the qualifications for a Federal Project Director to the DOE Project Management Certification Board, (4) provide weekly progress reports to the Principal Deputy Assistant Secretary for Environmental Management, (5) conduct quarterly progress reviews with the Secretary, and (6) develop an execution plan and master schedule for all of the major activities associated with the path forward for the project.

The Secretary indicated to Bechtel Corporation that it must demonstrate its commitment and project management capabilities to this critical project by accomplishing the following:

—Address the current technical issues, increasing the confidence in design, contain costs, and develop a viable schedule.

—Obtain the "best and brightest" from other major firms to critically assess the current technical approach, evaluate risks, review the cost/schedule, and develop recommendations to promptly and dramatically improve project performance.

—Provide the "best and brightest" site project management team (executives, engineers and technicians) for the duration of the project.

—Develop and submit to DOE a complete and credible Estimate-At-Completion.

Based on the actions directed by the Secretary of Energy and the reviews implemented by independent industry experts, there is now a strong project management framework in-place, a clear understanding of the technical issues surrounding the project, and a path forward for establishing a credible project cost and schedule baseline.

Question. What guarantee can you provide that Federal managers will do their job to control costs and demand the best from their contractors?

Answer. To improve project oversight the Department of Energy (DOE) has implemented the following key actions: establishment of a DOE Headquarters senior level oversight team, which is engaged in all aspects of the Waste Treatment and Immobilization Plant (WTP) project; recruitment by DOE of experienced personnel proficient in contracting, procurement, contract law, and project management; Federal certification of the WTP Project Director who is directed to strictly comply with the requirements of DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets; the requirement that the WTP contractor implement an Earned Value Management System, a proven, industry-standard performance moni-

toring tool, that fully complies with American National Standards Institute (ANSI) 748–A–1998; a structured weekly and monthly reporting system, plus a Quarterly Performance review conducted by the Assistant Secretary for Environmental Management; and delivery of regular project status updates to senior DOE management.

The DOE continues to proactively upgrade its project management capabilities at the WTP and strengthen the framework needed to ensure effective planning and long-term execution in all areas of this large, complex environmental remediation project.

Question. Do you believe you have the proper contract in place and what incentives are included in the contract to encourage cost reduction?

Answer. Yes, I believe the Department of Energy (DOE) has the proper contract in place at the Waste Treatment and Immobilization Plant. DOE has initiated actions to increase and strengthen Federal oversight of this contract. These actions include putting in place a coordinated and aggressive infrastructure of reviews and validations of project costs, schedules, technical design, seismic criteria, overall project management and controls. In parallel, DOE is considering various changes to the incentives structure for an impending contract modification to challenge the contractor to deliver a quality plant that meets the mission need and schedule expectations while achieving cost effectiveness. We hope to complete the contract modification early in fiscal year 2007.

Question. What impact have the recommendations by Defense Nuclear Facility Safety Board had on the cost estimate and cost schedule?

Answer. The Defense Nuclear Facilities Safety Board (DNFSB) has been actively involved in reviewing the adequacy of the seismic criteria used in the design of the Waste Treatment and Immobilization Plant (WTP). Based on all the reviews, DOE estimates that the impact of revising the seismic criteria, including the associated verification activities, for the WTP has resulted in an estimated overall project cost increase in the range of 10–15 percent with a resulting increase of approximately 20 percent to the overall project completion schedule.

DOE has engaged the U.S. Army Corps of Engineers (USACE) to perform an independent expert review of the Estimate-At-Completion (EAC) and to validate the EAC. This review includes an evaluation of those costs attributable to the inclusion of revised seismic criteria. The USACE's report is scheduled to be completed by late summer 2006.

LOS ALAMOS NATIONAL LAB

Question. The budget reduces soil and water cleanup activities at Los Alamos National Lab by $70 million. It has been 2 years since the Department negotiated and signed the 2005 Consent Order with the State of New Mexico on a fence-to-fence cleanup strategy to fully remediate the site by 2015.

The budget justification claims that despite the Department has yet to complete its validation of the site baseline in cost estimate. I find it remarkable that the Department, which has been onsite for more than five decades, doesn't have an accurate picture of the cleanup responsibilities or cost estimate.

The Consent Order requires that the LANL site be cleaned up by 2015. How will a $70 million reduction in soil and water remediation activities impact this cleanup date?

Answer. The Department of Energy (DOE) has had significant performance issues for several years with the previous contractor's environmental work at the Los Alamos National Laboratory (LANL). Additionally, LANL has not yet been able to provide an integrated cost and schedule baseline that DOE is able to validate.

Senior officials within DOE have asked for the involvement of senior executives of the parent companies of the new contractor in delivering efficiencies and a cost and schedule baseline able to withstand scrutiny and that can be validated by DOE. To that end, we believe that the new contract will address these performance issues, offer new opportunities to continue significant cleanup and risk reduction, and enable progress towards a new baseline. We assure you that we remain committed to the Los Alamos Compliance Order on Consent (March 2005) with the State of New Mexico and its environmental milestones.

Question. What specific cleanup activities will the Department forego as a result of the $70 million cut?

Answer. The Department of Energy is continuing a broad base of remediation activities. We are evaluating soil and water remediation activities including characterization, protection of groundwater resources, and remediation for opportunities for better performance under the new contract. We believe that the new contract will address past performance issues, offer us new opportunities to continue significant cleanup and risk reduction, and deliver progress towards a new baseline. Until we

have a cost and schedule baseline from the new contractor that is independently validated we are not able to determine what work, if any, will not be accomplished. However, we remain committed to the Los Alamos Compliance Order on Consent.

Question. What expectations does the Department have for the new contractor, Los Alamos National Security LLC, to find cost savings to offset the funding reduction in soil and water remediation?

Answer. Senior officials within the Department of Energy (DOE) have asked for the involvement of senior executives of the parent companies of the new contractor in delivering efficiencies and a cost and schedule baseline that is able to withstand scrutiny and that can be validated by the DOE. To that end, we believe that the new contract will address the Los Alamos National Laboratory's (LANL) performance issues, offer new opportunities to continue significant cleanup and risk reduction, and deliver progress toward a new baseline. We remain committed to the Los Alamos Compliance Order on Consent.

Question. As a result of short-changing cleanup at Los Alamos as specified in the 2005 Consent Order, how much do you believe will the Department incur in the way of fees?

Answer. The Department of Energy (DOE) has had performance issues for several years with the previous contractor's environmental work at the Los Alamos National Laboratory (LANL). Additionally, the LANL has not yet been able to provide an integrated cost and schedule baseline that the DOE is able to validate.

We believe that the new contract will address these performance issues, offer new opportunities to continue significant cleanup and risk reduction, and deliver progress toward a new baseline. We remain committed to the Los Alamos Compliance Order on Consent and as such do not anticipate any fines.

WASTE TREATMENT PLAN SEISMIC REGULATION

Question. It seems odd to me that the Department didn't have a clear picture of the seismic risk before they turned the first spade of dirt at the Waste Treatment Plant.

Why is the Department only now coming to terms with the changes in seismic standards?

Answer. The initial seismic design for the Hanford Waste Treatment and Immobilization Plant (WTP) was based on an extensive probabilistic seismic hazard analysis conducted in 1996 by Geomatrix Consultants, Inc. In 1999, the Department of Energy (DOE) approved this design basis following reviews by British Nuclear Fuels, Inc., and seismologists from the U.S. Army Corps of Engineers and the Lawrence Livermore National Laboratory.

DOE used the best information available starting in 1997 regarding the seismic hazard, namely the 1996 DOE Probabilistic Seismic Hazard Analysis. However, seismic information has continually evolved as seismic prediction methodologies have improved. This scientific progress led to the 2004 increases in seismic ground motion that provided a greater allowance for unknown soil and rock properties underneath the WTP site than were considered necessary in 1996. No new information regarding the likelihood of earthquakes or their strength contributed to this change. Rather, the change was due to the possibility that soil and rock underneath the WTP might attenuate earthquake movement less than was assumed in the 1996 work.

Question. Can you quantify the cost increases attributed to the change in seismic standards raised by the Defense Nuclear Facilities Safety Board?

Answer. Based on all the reviews, the Department of Energy (DOE) estimates that the impact of revising the seismic criteria, including the associated verification activities, for the Waste Treatment and Immobilization Plant has resulted in an estimated overall project cost in the range of 10–15 percent of the Estimate-At-Completion (EAC) with a resulting increase of approximately 20 percent to the overall project completion schedule.

The DOE has engaged the U.S. Army Corps of Engineers (USACE) to perform an independent expert review of the EAC and to validate the EAC. This review includes an evaluation of those costs attributable to the inclusion of revised seismic criteria. The USACE's report is scheduled to be completed by late summer 2006.

Question. What other facilities in Washington might be designed to the same seismic standard at the Waste Treatment Plant?

Answer. Presently, there are no planned facilities in the State of Washington, including Department of Energy (DOE) facilities that are designed to the current DOE seismic standards. These standards would only apply to new nuclear facilities having the potential for significant onsite consequences.

SAVANNAH RIVER SITE—SEISMIC REGULATIONS

Question. I understand that new seismic standards have forced the Department to reevaluate the design standard of the Salt Waste Processing Facility at Savannah River Site. This halt in progress will increase project costs and delay the start of this project by 2 years.

Why did this happen?

Answer. The Department of Energy (DOE) has established design and performance standards associated with Natural Phenomena Hazards (including seismic) in DOE Guide 420.1–2, "Guide for the Mitigation of Natural Phenomena Hazards for DOE Nuclear Facilities and Non-Nuclear Facilities", and DOE Standard 1021–93, "Natural Phenomenon Hazards Performance Categorization Guidelines for Structures, Systems and Components", that are tailored to the hazards associated with our nuclear facilities. Performance Category 3 (PC–3), representing the most stringent earthquake design requirements, is invoked where the highest hazards exist in these types of facilities.

In accordance with the DOE Directives, early in the design of facilities, the performance categorization is determined and the analysis is refined as the safety documentation matures. The Salt Waste Processing Facility (SWPF) preliminary safety analysis and the original facility design were based on a lower performance category determination. However, while addressing issues raised by the Defense Nuclear Facilities Safety Board the Department determined that the PC–3 design requirements would provide greater assurance that confinement of radioactive materials was adequate given the range of hazards.

ACCELERATED CLEANUP—CHANGE IN COURSE

Question. Last month Secretary Bodman testified that he would not be bound by the commitments by his predecessors regarding funding for Environmental Cleanup. By and large, the funding profile contained in the DOE's 5-year funding plan shows a decline in funding for most of the cleanup activities.

Are we to assume that the Department will reduce funding for environmental cleanup activities, and if so, where and to what end?

Answer. As part of the administration's Accelerated Cleanup Initiative, beginning in fiscal year 2003, increased funding was provided to accelerate cleanup and address urgent risks sooner than had been planned. Fiscal year 2005 was the peak year of funding for this initiative. We remain committed to completing the Environmental Management (EM) mission in a manner that protects the environment and public, and is safe for workers, while being fiscally responsible. The Department of Energy will continue to focus on risk reduction and cleanup completion while maintaining balance with other departmental and national priorities.

Question. How will out-year funding reductions impact the schedule for the cleanup at all of the cleanup sites?

Answer. The funding levels that had been developed in the 5-Year Plan to support the accelerated site closure strategy were based, in part, on overly optimistic assumptions. The Department of Energy (DOE) is currently updating these assumptions to reflect changes that have taken place in regulatory and statutory requirements, to incorporate lessons learned based on actual program performance, and to incorporate technological and acquisition strategies that have matured, with the goal of meeting the DOE's long-term environmental commitments. When these assumptions are fully updated, we will be in a position to assess potential impacts.

HANFORD CLEANUP—FAVORITE AMONG EQUALS

Question. The Environmental Cleanup budget is down by over $762 million. Funding for cleanup at virtually every site in the complex is down. Los Alamos has been reduced by over $50 million; Idaho is down $20 million; Savannah River is down by $94 million. In contrast, funding for Hanford is up, despite the fact that we still don't have a clear idea how much the Waste Treatment Facility will cost.

Bechtel, the current contractor, estimates the project will cost over $11 billion. This is up from the original cost estimate of $4.3 billion in 2001.

In the 2006 budget request, the Department predicted with 80 percent certainty that the cost of the project would be $5.8 billion and be completed by 2011. This is incredible to me that in 1 year the cost of the project could go from $5.8 billion to $11 billion.

It appears that everything that could go wrong with this project has gone wrong. There has been tremendous technical risk, poor engineering and design management, and regulatory uncertainty as a result of the Defense Nuclear Facilities Safety Board.

Mr. Garman, when will you have a better sense of the final cost estimate for the Waste Treatment Project?

Answer. In December 2005, the Department of Energy directed the Waste Treatment and Immobilization Plant (WTP) prime contractor, Bechtel National Inc., to deliver an updated Estimate-At-Completion (EAC) to reflect available funding for fiscal year 2006 and impacts of the results of the independent technical and cost reviews by May 31, 2006.

DOE has engaged the U.S. Army Corps of Engineers to perform an independent expert review of the EAC and to validate the EAC. The USACE has retained a number of recognized industry experts working with its own senior staff to perform this review. The USACE's report is scheduled to be completed by late summer 2006. Once the EAC is validated by the USACE, DOE would then validate and approve the baseline for the WTP project.

Question. What can and will be been done to get control of this project and to reverse the cost increases?

Answer. I think it is important to note that all prior planned designs for the Waste Treatment and Immobilization Plant (WTP) were based on a plant capable of treating and immobilizing only one-fourth of the high-level waste at the Hanford site. The current plant is sized to treat and immobilize 100 percent of the high-level waste, thus eliminating the need for a second, very sizeable and costly plant that the Department of Energy's (DOE's) prior plan had envisioned. In addition, since this project first got underway in the late 1990's, major advancements in technology have been recognized that will improve WTP performance. These advancements include: development of an ion exchange material to more effectively and less expensively remove radioactive cesium from tank waste liquids; improvement of throughput capacities for the furnaces used to vitrify the radioactive waste; and enhanced blending ability of pumps to maintain a consistent waste mix. We anticipate that benefits from these improvements will avoid the necessity of building a second plant for high-level waste, improve turnaround time, reduce personnel exposure, reduce performance risk and operating cost, and reduce the total number of canisters produced, thereby decreasing the volume of material ultimately sent to a repository for permanent disposal.

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sition of Capital Assets; the requirement that the WTP contractor implement an Earned Value Management System, a proven, industry-standard performance monitoring tool, that fully complies with American National Standards Institute (ANSI) 748–A–1998; a structured weekly and monthly reporting system, plus a Quarterly Performance review conducted by the Assistant Secretary for Environmental Management; and delivery of regular project status updates to senior DOE management.

The DOE continues to proactively upgrade its project management capabilities at the WTP and strengthen the framework needed to ensure effective planning and long-term execution in all areas of this large, complex environmental remediation project.

Question. Do you believe you have the proper contract in place and what incentives are included in the contract to encourage cost reduction?

Answer. Yes, I believe the Department of Energy (DOE) has the proper contract in place at the Waste Treatment and Immobilization Plant. DOE has initiated actions to increase and strengthen Federal oversight of this contract. These actions include putting in place a coordinated and aggressive infrastructure of reviews and validations of project costs, schedules, technical design, seismic criteria, overall project management and controls. In parallel, DOE is considering various changes to the incentives structure for an impending contract modification to challenge the contractor to deliver a quality plant that meets the mission need and schedule expectations while achieving cost effectiveness. We hope to complete the contract modification early in fiscal year 2007.

Question. What impact have the recommendations by Defense Nuclear Facility Safety Board had on the cost estimate and cost schedule?

Answer. The Defense Nuclear Facilities Safety Board (DNFSB) has been actively involved in reviewing the adequacy of the seismic criteria used in the design of the Waste Treatment and Immobilization Plant (WTP). Based on all the reviews, DOE estimates that the impact of revising the seismic criteria, including the associated verification activities, for the WTP has resulted in an estimated overall project cost increase in the range of 10–15 percent with a resulting increase of approximately 20 percent to the overall project completion schedule.

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LOS ALAMOS NATIONAL LAB

Question. The budget reduces soil and water cleanup activities at Los Alamos National Lab by $70 million. It has been 2 years since the Department negotiated and signed the 2005 Consent Order with the State of New Mexico on a cleanup strategy to fully remediate the site by 2015.

The budget justification claims that the Department has yet to complete its validation of the site baseline in cost estimate. I find it remarkable that the Department, which has been onsite for more than five decades, doesn't have an accurate picture of the cleanup responsibilities or cost estimate.

The Consent Order requires that the LANL site be cleaned up by 2015. How will a $70 million reduction in soil and water remediation activities impact this cleanup date?

Answer. The Department of Energy (DOE) has had significant performance issues for several years with the previous contractor's environmental work at the Los Alamos National Laboratory (LANL). Additionally, LANL has not yet been able to provide an integrated cost and schedule baseline that DOE is able to validate.

Senior officials within DOE have asked for the involvement of senior executives of the parent companies of the new contractor in delivering efficiencies and a cost and schedule baseline able to withstand scrutiny and that can be validated by DOE. To that end, we believe that the new contract will address these performance issues, offer new opportunities to continue significant cleanup and risk reduction, and enable progress towards a new baseline. We assure you that we remain committed to the Los Alamos Compliance Order on Consent (March 2005) with the State of New Mexico and its environmental milestones.

Question. What specific cleanup activities will the Department forego as a result of the $70 million cut?

Answer. The Department of Energy is continuing a broad base of remediation activities. We are evaluating soil and water remediation activities including characterization, protection of groundwater resources, and remediation for opportunities for better performance under the new contract. We believe that the new contract will

address past performance issues, offer us new opportunities to continue significant cleanup and risk reduction, and deliver progress towards a new baseline. Until we have a cost and schedule baseline from the new contractor that is independently validated we are not able to determine what work, if any, will not be accomplished. However, we remain committed to the Los Alamos Compliance Order on Consent.

Question. What expectations does the Department have for the new contractor, Los Alamos National Security LLC, to find cost savings to offset the funding reduction in soil and water remediation?

Answer. Senior officials within the Department of Energy (DOE) have asked for the involvement of senior executives of the parent companies of the new contractor in delivering efficiencies and a cost and schedule baseline that is able to withstand scrutiny and that can be validated by the DOE. To that end, we believe that the new contract will address the Los Alamos National Laboratory's (LANL) performance issues, offer new opportunities to continue significant cleanup and risk reduction, and deliver progress toward a new baseline. We remain committed to the Los Alamos Compliance Order on Consent.

CONSOLIDATION OF NUCLEAR MATERIAL IN THE COMPLEX

Question. The Secretary has wisely assembled a team to consider various options to reduce the amount of special nuclear material in the complex that must receive high level security.

By locating unnecessary nuclear material in a central secure area, it can reduce the security costs dramatically. By permanently disposing of this material we can eliminate security costs entirely.

I understand that Charlie Anderson with Environmental Management has been chosen to lead this team of DOE and NNSA officials.

What is the status of this evaluation and when will the Department propose a waste consolidation and disposal plan to Congress for its consideration?

Answer. We currently expect that the strategic plan will be completed within a year.

Question. What are the greatest challenges the Department is facing in consolidating this material?

Answer. The greatest challenge facing the Department of Energy regarding the consolidation of special nuclear materials is to ensure that our departmental consolidation efforts are consistent with individual program needs while maximizing security and cost savings and minimizing the number of consolidation moves.

Consolidation of nuclear materials also requires, among other things, adequate storage space and availability at the receiving site, compliance with applicable laws, appropriate National Environmental Policy Act analyses, and sufficient transportation resources. Community support is also critical, particularly in the State and around the site where the materials would be received.

Question. Are their any legislative or regulatory impediments that currently prevent the Department from moving forward?

Answer. Although there may be legislative or regulatory requirements that would need to be met before the Department of Energy may move forward with its consolidation activities, none of these ultimately would prevent us from moving forward when met. For example, there may be National Environmental Policy Act requirements to be met for some activities. Other requirements may also apply, for example, in the case of the shipment of surplus weapons-usable plutonium to the Savannah River Site previously destined for the now-cancelled Plutonium and Immobilization Plant, there are requirements under section 3155 of the National Defense Authorization Act for Fiscal Year 2002 (Public Law 107–107) for the submission of a plan to Congress identifying a disposition path for such plutonium prior to shipment.

RECLASSIFYING WASTE AT HANFORD, WASHINGTON

Question. Mr. Garman, the Congress reclassified certain waste as being "incidental to reprocessing" and as a result, this would allow the Department to leave a small amount of material in the tanks that would be filled with grout to permanently immobilize any remaining waste. This is the standard being applied to cleanup at Idaho and Savannah River. I am told that applying this same authority to the Hanford tank farm has the potential to save $10 to $15 billion.

If this authority was extended to Hanford, can you estimate what the budgetary impact would be for this project? How much time could be saved?

Answer. The Department of Energy (DOE) committed during the debate on section 3116 of the National Defense Authorization bill that we would not work unilaterally to add another State to the reclassification authorization. That being said,

DOE has not completed an analysis to determine how much time or money could be saved should this authority be extended to Washington State.

Question. Does the Department believe this standard should be applied to the Hanford tank farm cleanup?

Answer. The Department of Energy (DOE) has discussed with State of Washington officials on several occasions the benefits it perceives that application of section 3116 would offer to the citizens of the State of Washington. These benefits include a provision for the U.S. Nuclear Regulatory Commission's consultation and monitoring, and the certainty concerning the process to be used in making determinations. However, the DOE committed during the debate on section 3116 of the National Defense Authorization bill that we would not work unilaterally to add another State to the reclassification authorization. That being said, DOE has not completed an analysis to determine how much time or money could be saved should this authority be extended to the State of Washington.

WASTE TREATMENT PLAN SEISMIC REGULATION

Question. It seems odd to me that the Department didn't have a clear picture of the seismic risk before they turned the first spade of dirt at the Waste Treatment Plant.

Why is the Department only now coming to terms with the changes in seismic standards?

Answer. The initial seismic design for the Hanford Waste Treatment and Immobilization Plant (WTP) was based on an extensive probabilistic seismic hazard analysis conducted in 1996 by Geomatrix Consultants, Inc. In 1999, the Department of Energy (DOE) approved this design basis following reviews by British Nuclear Fuels, Inc., and seismologists from the U.S. Army Corps of Engineers and the Lawrence Livermore National Laboratory.

DOE used the best information available starting in 1997 regarding the seismic hazard, namely the 1996 DOE Probabilistic Seismic Hazard Analysis. However, seismic information has continually evolved as seismic prediction methodologies have improved. This scientific progress led to the 2004 increases in seismic ground motion that provided a greater allowance for unknown soil and rock properties underneath the WTP site than were considered necessary in 1996. No new information regarding the likelihood of earthquakes or their strength contributed to this change. Rather, the change was due to the possibility that soil and rock underneath the WTP might attenuate earthquake movement less than was assumed in the 1996 work.

Question. Can you quantify the cost increases attributed to the change in seismic standards raised by the Defense Nuclear Facilities Safety Board?

Answer. Based on all the reviews, the Department of Energy (DOE) estimates that the impact of revising the seismic criteria, including the associated verification activities, for the Waste Treatment and Immobilization Plant has resulted in an estimated overall project cost in the range of 10–15 percent of the Estimate-At-Completion (EAC) with a resulting increase of approximately 20 percent to the overall project completion schedule.

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Question. What other facilities in Washington might be designed to the same seismic standard as the Waste Treatment Plant?

Answer. Presently, there are no planned facilities in the State of Washington, including Department of Energy (DOE) facilities that are designed to the current DOE seismic standards. These standards would only apply to new nuclear facilities having the potential for significant onsite consequences.

SAVANNAH RIVER SITE—SEISMIC REGULATIONS

Question. I understand that new seismic standards have forced the Department to reevaluate the design standard of the Salt Waste Processing Facility at Savannah River Site. This halt in progress will increase project costs and delay the start of this project by 2 years.

Why did this happen?

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tures, Systems and Components, that are tailored to the hazards associated with our nuclear facilities. Performance Category 3 (PC–3), representing the most stringent earthquake design requirements, is invoked where the highest hazards exist in these types of facilities.

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ACCELERATED CLEANUP—CHANGE IN COURSE

Question. Last month Secretary Bodman testified that he would not be bound by the commitments by his predecessors regarding funding for Environmental Cleanup. By and large, the funding profile contained in the DOE's 5-year funding plan shows a decline in funding for most of the cleanup activities.

Are we to assume that the Department will reduce funding for environmental cleanup activities, and if so, where and to what end?

Answer. As part of the administration's Accelerated Cleanup Initiative, beginning in fiscal year 2003, increased funding was provided to accelerate cleanup and address urgent risks sooner than had been planned. Fiscal year 2005 was the peak year of funding for this initiative. We remain committed to completing the Environmental Management (EM) mission in a manner that protects the environment and public, and is safe for workers, while being fiscally responsible. The Department of Energy will continue to focus on risk reduction and cleanup completion while maintaining balance with other Departmental and national priorities.

Question. How will out-year funding reductions impact the schedule for the cleanup at all of the cleanup sites?

Answer. The funding levels that had been developed in the 5-Year Plan to support the accelerated site closure strategy were based, in part, on overly optimistic assumptions. The Department of Energy (DOE) is currently updating these assumptions to reflect changes that have taken place in regulatory and statutory requirements, to incorporate lessons learned based on actual program performance, and to incorporate technological and acquisition strategies that have matured, with the goal of meeting the DOE's long-term environmental commitments. When these assumptions are fully updated, we will be in a position to assess potential impacts.

WERC/DOE COOPERATIVE AGREEMENT

Question. The Department has failed to live up to its commitment to provide funding under the cooperative agreement with WERC. Why is this?

Answer. As directed by the Conference Report (109–275) accompanying the fiscal year 2006 Energy and Water Development Appropriations Act (Public Law 109–103), the Department of Energy provided the American Water Works and the Waste Education Research Consortium (WERC) with $7,000,000 for advanced concept desalination and arsenic treatment research. WERC received $749,790 of these funds. WERC will also receive the prior year uncosted carryover of $5,500,000.

CLEANUP DELAYS AT K–25

Question. I understand the completion date for the ETTP have been delayed from fiscal year 2008 until mid-fiscal year 2009.

Why is this and what impact will this have on the cost of the project?

Answer. The current contract calls for physical completion of the East Tennessee Technology Park by September 30, 2008. The Department of Energy is currently reviewing performance against the baseline for this project to determine the cost and schedule impacts associated with numerous factors including, but not limited to, the complexity of the work, safety concerns, unexpected issues, and increased cleanup requirements.

Question. Do you need additional funding in fiscal year 2007?

Answer. No additional funding in fiscal year 2007 is needed. The Department of Energy is currently reviewing the baseline for this project to determine the cost and schedule impacts, which would provide the basis for any future budget requests.

GAO REPORT ON TOTAL ENVIRONMENTAL LIABILITIES

Question. The GAO reported that the Department's total estimated cleanup responsibilities could exceed the $180 billion, by as much as $25 billion.

GAO found that cost significant increase can be attributed to delays in opening up Yucca Mountain and the Department's ability to dispose of high level waste.

Do you agree with the assessment by GAO? Please explain.

Answer. Several assumptions made as part of the Department of Energy's (DOE) Accelerated Cleanup initiative were overly optimistic and have not materialized. In addition, we have identified legacy cleanup requirements at several sites that have not been included in prior Office of Environmental Management (EM) work scope, and some key projects have experienced performance issues. As a result, the life-cycle cost of the cleanup program could increase by $25 billion, as indicated in the Government Accountability Office's report. DOE has established and implemented a more stringent, highly monitored project management program that is making every effort to identify and address unexpected developments in project design, construction, schedule and scope as they emerge.

In addition, the $180 billion estimate included approximately $15 billion for high-level waste and spent nuclear fuel disposal at the Yucca Mountain geological repository which was planned to begin receiving shipments from EM in 2010. The DOE estimates that a 5-year delay in opening the Yucca Mountain geological repository could potentially increase costs by as much $1 billion to EM's total cost for managing waste. The actual amount of this increase would depend on a number of factors, including when EM completes the cleanup of various sites and had the waste at those sites ready for shipment, the need to build additional storage buildings, and added operating costs.

YUCCA MOUNTAIN FUNDING

Question. The 5-year funding profile provided to Congress shows essentially flat funding for this program over this period. In years past, the out-year funding levels were shown to sharply increase during the time period of license application, work on-site preparation, and rail route preparation activities—ordering the steel for the rails alone will be a very costly venture.

Will that level of funding be sufficient to defend a license application and undertake other activities necessary to prepare for construction and operation of the repository?

Answer. The 5-Year Plan DOE submitted to Congress contains two scenarios. The scenario using a formula-based approach for out-years in the fiscal year 2007 budget would not allow the Yucca Mountain program to accelerate pre-licensing construction activities. The above-target scenario moves the program forward as quickly as possible.

While there is a flat funding case as you described, the Office of Civilian Radioactive Waste Management also developed "above target" estimates of $661 million in fiscal year 2008, $963 million in fiscal year 2009, $1.07 billion in fiscal year 2010, and $975 million in fiscal year 2011. The above-target scenario is more consistent with planned construction activities needed to timely develop the repository. The administration is committed to developing Yucca Mountain as a geologic repository. We have made no policy decisions on out-year funding for Yucca Mountain, but I can assure you we will continue to support expeditious development of the repository.

Question. If not, do you expect that the out-year budgets will need to be adjusted once a new program schedule is established?

Answer. The amounts in the 5-Year Plan for the out-year budget reflect steady progress toward the receipt of a construction authorization for a repository at Yucca Mountain in the near term. However, in order to reach the goal of an operating geologic repository at Yucca Mountain in a timely manner, significant budget increases for the program will be required for construction and operations of both the repository and the rail line in Nevada. The administration has supported legislation calling for funding reform for the program in the form of reclassifying mandatory Nuclear Waste Fund receipts as discretionary offsetting collections, in an amount equal to appropriations from the Fund for authorized waste disposal activities. This will address a technical budgetary problem that has acted as a disincentive to adequate funding.

The Department's legislative proposal, the "Nuclear Fuel Management and Disposal Act" was submitted to Congress after the date of this hearing on April 6, 2006, and contains a provision to implement this funding reform.

YUCCA MOUNTAIN REQUIREMENTS

Question. Administration witnesses have consistently testified that it is important to move forward with the Yucca Mountain project regardless of the outcome of the Global Nuclear Energy Partnership (GNEP). One of the reasons relates to defense waste.

How much defense waste is currently planned for permanent disposition at Yucca Mountain?

Answer. The Department currently has approximately 2,500 metric tons of defense spent fuel and 10,500 metric tons of defense high-level radioactive waste. Because of the 70,000 metric tons statutory limit, the Department currently plans to dispose of only 7,000 metric tons of defense spent fuel and high-level radioactive waste at Yucca Mountain.

Question. Under the current schedule when will this waste be ready for shipment to Yucca?

Answer. Each Department of Energy site that manages spent fuel or high-level waste destined for disposal in the repository will need to place the waste into disposable canisters and load them into NRC certified casks. For most sites, this has not yet occurred. These canisters are designed to be transported in NRC certified casks to the repository and be disposed in waste packages at Yucca Mountain. Currently, Savannah River has waste that has been vitrified; Hanford and Idaho have not yet vitrified their waste. Readiness to ship spent nuclear fuel and high-level waste from each site is dependent on site plans and schedules for high-level waste treatment, spent nuclear fuel disposition and packaging activities, and the construction of cask loading facilities. Current plans developed by the Office of Environmental Management for each site are summarized in the table below.

SITE	Date of Capability to Ship HLW Canisters	Date of Capability to Ship SNF Canisters
Savannah River	2012	2015
Hanford Site	2020	2018
Idaho National Lab	2022	2015

Question. If Yucca were not available how would this waste be handled?

Answer. If a repository were not built, the waste would continue to be stored at the current sites.

YUCCA MOUNTAIN PROGRAM STATUS

Question. In the past year, a decision was made to redirect the approach taken to fuel handling at the repository to a "clean" approach utilizing a single canister for transportation, aging and disposal (TAD) package.

Please explain this new approach and its rationale.

Answer. We believe that the clean-canistered approach to receiving commercial spent fuel will allow us to greatly simplify the licensing, construction, and operation of the facilities at Yucca Mountain. With a clean-canistered approach personnel will be handling primarily canistered waste, not individual fuel assemblies as previously planned. These canisters will provide another contamination barrier between the worker and the waste. For example, when routine maintenance is required in the canistered operating facilities, workers will not have to deal with radiological contamination as they would with individual fuel assembly handling operations.

The canistered approach will simplify the licensing and construction of the repository, while easing complexities of Yucca Mountain's post-construction operations. The new approach envisions spent fuel being delivered to Yucca Mountain primarily in transport, aging, and disposal (TAD) canisters which are then placed in a waste package for emplacement. Handling of bare fuel will be limited and will be accommodated by much smaller facilities. Switching to a primarily clean facility plan will improve safety and operations and dramatically improve the overall performance of Yucca Mountain operations.

Question. What impact has this redirection had on preparing the license application?

Answer. To incorporate the new clean-canistered approach, we have reviewed the existing designs for the repository surface facilities, and have initiated efforts to redesign these facilities to incorporate the benefits that result from the clean-canistered approach. We believe that the redesigned surface facilities will be smaller, less costly, and simpler to design, license, construct and operate. As a result, the Department believes any additional time spent incorporating the clean-canistered

approach will be offset by reductions in the time required to license and construct the repository facilities.

Question. Have you analyzed the impact that this redirection could have on the timing and cost of license review, program construction and operations?

Answer. As part of the critical decision process in the Department, the program is required to provide a revised cost and schedule for the program that incorporates the canister approach. That process is expected to be completed and the revised cost and schedule provided to the Secretary this summer.

INTERIM STORAGE AND REPROCESSING

Question. The Energy and Water Conference report for fiscal year 2006 provided the Department with funding to support the siting selection process of interim storage and reprocessing facilities. Communities would be provided $5 million to support a site development plan and licensing strategy.

What is the status of this program? When will the Department provide the funding support to these communities, and under what terms?

Answer. DOE issued a request for Expressions of Interest (EOI) in the Federal Register on March 17, 2006, announcing its intention to initiate a competition to conduct site evaluations to aid in selecting one or more sites suitable for development of integrated recycling facilities. The EOI sought information to assist in the preparation of a solicitation for proposals to prepare site evaluation reports. A total of 43 responses were received to the EOI.

The solicitation, planned for spring 2006, will be open to domestic sources, public and private, and will encourage teaming and community involvement. Proposals will be evaluated for 90 days, followed by the selection of those proposals for which funding will be provided to prepare a site evaluation report. Each of the resulting site evaluation reports will be reviewed for potential inclusion as an alternative in the EIS analysis for the GNEP Technology Demonstration Program (TDP). DOE currently intends to solicit proposals only for non-DOE sites, given that information relating to the identification of DOE sites for potential inclusion as alternatives in the GNEP–TDP EIS is already available to the Department. The potential sites will be evaluated, in connection with the EIS process, and DOE currently anticipates that it will make site location decisions in the summer 2008 following completion of the EIS.

To evaluate the potential environmental impacts at candidate sites for the demonstration facilities, DOE has taken steps to initiate the preparation of an EIS for the GNEP–TDP. This process began with a March 22, 2006 Advance Notice of Intent (ANOI) which requested comments from interested parties on the scope of the EIS, reasonable alternatives, and other relevant information. Comments received will be used to develop the Notice of Intent (NOI) and to assist DOE in completing the EIS. The Draft EIS is scheduled to be completed by late spring, 2007 and the Final EIS by late spring, 2008. A Record of Decision (ROD) is expected to be issued in summer 2008.

YUCCA MOUNTAIN—LICENSE APPLICATION

Question. Secretary Bodman testified that the Department anticipates providing a new schedule for license application and repository operations by early summer. The budget justification materials indicate that among the tasks to be accomplished in fiscal year 2007 is defending a license application to the NRC.

Does the budget request assume that a license application will occur in fiscal year 2007, and if not, would the request need to be adjusted?

Answer. No. The fiscal year 2007 budget request does not assume the license application will be submitted in fiscal year 2007 and accordingly does not need to be adjusted. The license defense activities in fiscal year 2007 relate to preparation of the license application, and include identifying and preparing information in an acceptable format to submit to the Nuclear Regulatory Commission (NRC) electronic hearing docket, which is an electronic information system that will receive, distribute, store and retrieve docket materials for licensing and proceedings. It also includes identification of expert witnesses and preparation of information that may be needed to respond to contentions raised by other parties to the licensing proceedings. Prior to submitting the license application, the Department plans to have in place procedures and processes to respond to NRC's requests for additional information once the license application is submitted. Recognizing that the NRC staff is only planning an 18-month review period prior to the hearings, the Department needs to be able to respond to Requests for Additional Information rapidly and comprehensively. A thorough legal and regulatory review process, combined with timely interactions with the NRC during the pre-application period, will help the program

develop a license application that the NRC can docket, review and adjudicate in the 3-year period required by the Nuclear Waste Policy Act.

Question. What is the Department's current estimate for the cost of the rail line to Yucca Mountain?

Answer. The current estimate is approximately $2 billion for the life cycle cost of the rail line to Yucca Mountain. The estimate is specific to the Caliente rail corridor and includes the cost of facilities related to rail operations. These facilities include sidings and basic maintenance capability where the Nevada rail line connects to existing mainline track, maintenance-of-way facilities along the track and an end-of-line facility proximate to the repository. The Department believes the cost of constructing rail access to the repository along the Caliente corridor is still viable based on these considerations, but is reviewing its ability to reduce the costs.

YUCCA MOUNTAIN REPOSITORY OPERATIONS

Question. Some degree of aging of fuel at the site before emplacement in the repository has always been assumed.

What is your current thinking on fuel aging at Yucca and how might it be accomplished?

Answer. Currently, our plans for spent fuel aging at Yucca Mountain include several large above-ground aging pads. With the program's change to the clean-canistered approach for transport, aging and disposal (TAD) of spent fuel, it is expected that TAD-based storage systems will be used for most of the required spent fuel aging. We currently expect the license application will provide for aging capacity in the range of 20,000 to 40,000 metric tons.

Question. Could the duration of fuel aging be influenced by developments with GNEP?

Answer. Repository designs have consistently included aging capability needed to allow the spent fuel received from the utility sites to cool until it is suitable for permanent underground disposal. These aging facilities are an integral part of our disposal operations. Although Global Nuclear Energy Partnership (GNEP) offers the promise of development of recycling technologies over the next several decades, there are no current plans to store existing spent fuel inventories for possible recycling in the future. If commercial GNEP technologies are proven feasible and eventually developed, repository operations may need to be adjusted, as appropriate, to incorporate the benefits for future inventories of spent fuel that GNEP processing might provide.

YUCCA MOUNTAIN CAPACITY

Question. Yucca Mountain currently has a legislated capacity limit of 70,000 metric tons as set forth by the Nuclear Waste Policy Act.

Based on technical factors alone, what is the physical capacity of Yucca to accommodate spent fuel?

Answer. The environmental impact statement for the Yucca Mountain repository in its cumulative impacts section evaluated the disposal of approximately 120,000 metric tons of spent nuclear fuel and high-level waste. However, the actual physical capacity of Yucca Mountain is exceeds that amount. The Department believes the physical capacity of Yucca Mountain is at least adequate to dispose of the commercial and DOE spent fuel and high-level waste that currently exists, and could provide for the disposal of all the spent nuclear fuel from the existing suite of nuclear plants with life extensions.

QUESTIONS SUBMITTED BY SENATOR THAD COCHRAN

Question. Mr. Chairman, I appreciate your holding this hearing to review budgets of the Department of Energy's Office of Science, Office of Nuclear Energy, Office of Fossil Energy, Office of Environmental Management as well as many other important accounts with the Department of Energy. I want to join you in thanking the witnesses for being here to provide testimony and answer questions.

I am pleased that the Department is continuing to look for alternate and renewable sources of energy to correct the trend toward unnecessary reliance on foreign sources of oil and gas. My State continues to conduct research to develop cleaner and more efficient sources of energy. After Hurricane Katrina, fuel costs rose as much as $3 per gallon and finding diesel to transport necessities or to run the electrical generators used to cool poultry production facilities became a challenge. Our biodiesel suppliers provided this needed fuel which proved not only to be a cleaner fuel, but a fuel that is a substitute for foreign oil.

Mr. Chairman, I look forward to working with you this year on these important accounts as well as the new American Competitiveness Initiative and the Advanced Energy Initiative.

It is important to implement a regional approach to biomass research because of the diversity of sources in the United States. Biomass sources and techniques in Mississippi are much different than the biomass opportunities available in the Midwest.

How do you perceive the Department's role in facilitating a regional approach to research and development?

Answer. The Department has requested funding in fiscal year 2007 to implement the concept of regional feedstock development partnerships. We agree that the opportunities for biomass feedstocks development are best approached regionally, because differences in soils, rainfall, climate, agricultural land-use patterns, and established markets exist at a regional level. Partnerships are needed because of the complexity of feedstock issues that include basic and applied science to develop the feedstock resources, infrastructure feedstock needs for biorefineries including reliability, availability, and cost; and sustainability issues as they pertain to resource development. Partnership efforts will bring Federal funding together with the biofuels production industry with the grower community and university researchers to better define the actual resource on a regional and local basis.

LOAN GUARANTEE

Question. One of the important loan guarantee programs authorized under the Energy Policy Act of 2005 would encourage the commercialization of projects which reduce air pollutants as well as employ improved technologies in many areas such as renewable energy systems, carbon capture, and advanced fossil energy technology. I understand that the Department has not asked for funding for the loan guarantee program or demonstration project authorized under Title 17.

What is the Department's view of this program and why was funding not requested this year?

Answer. The Department of Energy (DOE) is working to meet the Secretary's previously-stated goal of accepting the first preliminary applications for "self-pay" loan guarantees under Title XVII before the end of fiscal year 2006. We are proceeding, but we are doing so with no small measure of caution and prudence. The Department has established a small loan guarantee office under the Department's Chief Financial Officer. In implementing the program, we will follow the Federal Credit Reform Act of 1990 (FCRA) and Office of Management and Budget (OMB) guidelines, and we will emulate "best practices" of other Federal agencies. Toward that end, we are drafting program policies and procedures, establishing a credit review board, and are planning to employ outside experts.

Title XVII authorizes DOE to issue loan guarantees for projects that avoid, sequester, or reduce air pollutants and/or anthropogenic emissions of greenhouse gases, and "employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued." Section 1703(b) lists some specific categories of projects that are eligible for these loan guarantees. Title XVII allows for project developers to pay the subsidy cost of loan guarantees issued by DOE. While this "self-pay" mechanism may reduce the need for appropriations, it is possible that the ultimate cost to the taxpayer could be significantly higher than the cost of the subsidy cost estimate. To minimize this possibility, DOE's evaluations of applications will entail rigorous analysis and careful negotiation of terms and conditions.

FCRA contains a requirement that prevents us from issuing a loan guarantee until we have authorization to do so in an appropriations bill. We do not believe we have authority to proceed with an award absent having the necessary explicit authorization in an appropriations bill.

Question. What type of interest from researchers and the public has the Department received regarding this newly authorized program?

Answer. The loan guarantee provisions in the Energy Policy Act of 2005 are generating a great deal of interest. The Department regularly receives questions about every aspect of the loan guarantee program from prospective project sponsors and other constituencies. The topics of these questions range from the application and transaction closing processes to the criteria for eligible projects.

Question. Has the Department received applications, from whom, and for what projects? If not, when will the DOE be accepting applications for "self-pay" loan guarantees, and how long does DOE anticipate it will take to process an application?

Answer. Although the Department has received many inquiries about loan guarantees, DOE has not received any applications for loan guarantees.

The Department of Energy (DOE) is working to meet the Secretary's previously stated goal of accepting the first preliminary applications for "self-pay" loan guarantees under Title XVII before the end of fiscal year 2006. We are proceeding, but we are doing so with no small measure of caution and prudence. The Department has established a small loan guarantee office under the Department's Chief Financial Officer. In implementing the program, we will follow the Federal Credit Reform Act of 1990 (FCRA) and Office of Management and Budget (OMB) guidelines, and we will emulate "best practices" of other Federal agencies. Toward that end, we are drafting program policies and procedures, establishing a credit review board, and are planning to employ outside experts.

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Question. In working with Fischer-Tropsch technologies, does the Department have suggestions on how to provide government assistance to those companies who are interested in commercializing this technology?

Answer. The Department of Energy (DOE) completed its successful RD&D program on coal-to-liquids including related Fischer-Tropsch (FT) technologies several years ago. The Energy Policy Act of 2005 (EPAct 2005) authorizes new DOE and other assistance (e.g., investment tax credits) to early commercial projects that employ FT technologies, including loan guarantees under Title XVII.

The Department is working to meet the Secretary's previously-stated goal of accepting the first preliminary applications for "self-pay" loan guarantees under Title XVII before the end of fiscal year 2006. We are proceeding, but we are doing so with no small measure of caution and prudence. The Department has established a small loan guarantee office under the Department's Chief Financial Officer. In implementing the program, we will follow the Federal Credit Reform Act of 1990 (FCRA) and Office of Management and Budget (OMB) guidelines, and we will emulate "best practices" of other Federal agencies. Toward that end, we are drafting program policies and procedures, establishing a credit review board, and are planning to employ outside experts.

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VEHICLE PROGRAMS

Question. The fiscal year 2007 budget request for Energy Supply and Conservation Accounts supports development of a number of new energy technologies, including programs that fund basic and applied research, development, demonstration, and technical assistance. These efforts promote the deployment of new technologies needed to support both Hybrid Electric and Fuel Cell vehicle development under the

FreedomCAR program. Lightweight materials, electronic power control, electric drive motors, and advanced energy storage devices are specifically identified in the fiscal year 2007 budget as areas where Federal R&D investment seeks to achieve technology breakthroughs.

Is it fair to state that the United States has fallen behind its global competitors in the race to develop the next generation of Hybrid Electric Vehicles (HEV) to meet projected consumer demand? How far behind is the United States in developing next generation HEVs that will ensure our competitiveness in this market?

Answer. No, we do not believe that the United States is lagging behind any country from a next-generation perspective. The fiscal year 2007 presidential request reallocated vehicle funding program resources to increase focus on plug-in hybrid electric vehicle research. Our technological goals are ambitious, and progress to date is good. We have seen pre-competitive advances in the reduction in the cost of the next generation of batteries, as well as improvements in the cost and performance of other essential components of HEVs. Other indicators of progress include advances in the nickel metal hydride battery developed through DOE-sponsored R&D. Work is underway to develop the high energy batteries for plug-in HEVs, expected to keep the United States dominant in this key area.

There is also a need to reduce the cost of HEV technology to increase consumer acceptance. A recent poll indicated that over 50 percent of the American public desires HEVs, but believes they are too costly (based on a telephone poll of 1,001 adults conducted March 10–12 and released April 10 by CNN/USA Today/Gallup). The FreedomCAR 2010 technology targets aim to resolve the issue of cost barriers. This goal is shared by industry; for example, Toyota recently announced an effort to reduce their HEV component costs by two-thirds in the same time frame.

Question. Electronic power control is one of the activities for which R&D investment has been targeted under the FreedomCAR program. Has the program identified and documented the technical approaches that have the most potential to provide radical improvements or "breakthroughs" in electronic power control for next generation HEVs? If so, what are the potential breakthrough technologies?

Answer. We have identified and documented the technical approaches for the next generation of hybrid electric vehicles (HEVs), and feel the potential breakthrough technologies for high-temperature operation include wide bandgap materials, advanced packaging, and high-temperature capacitors. Silicon Carbide (SiC) is the only wide bandgap material currently available to produce useable power devices. Ongoing research and development efforts are focused on these technologies. In fiscal year 2007 we anticipate funding efforts to build an all SiC inverter and a high-temperature DC/DC converter. A new solicitation is also planned in fiscal year 2007 to seek other alternative, high-temperature technologies.

Question. Which of these potential breakthrough technologies in electronic power controls have the greatest potential to accelerate U.S. efforts to develop the next generation HEVs?

Answer. The FreedomCAR and Fuel Partnership's Electrical and Electronics Technical Team has identified the cost, weight, and volume targets and reliability requirements to help make HEVs a cost-competitive choice for consumers. Meeting these targets would require improvements over current technologies to reduce weight and volume by a factor of two and cost by a factor of four. Power electronics capable of operating at ambient temperatures of 200° C would likely require silicon carbide (SiC) devices, and high-temperature packaging to enable high-temperature operation. These technologies are the highest priority research need for the next generation HEVs. The fiscal year 2007 budget supports continued research to address these challenges.

Question. Would the successful development of air-cooled vehicle-class power electronics at a vastly accelerated pace provide the kind of "breakthrough" that would allow the United States to catch up with our global competitors? If so, what are the most promising and highest priority technologies for air-cooled vehicle-class power electronics to which additional investment should be targeted?

Answer. Air-cooled power electronics offer the potential to meet the targets and requirements for size, weight, cost, volume, and reliability to make hybrid electric vehicles (HEVs) an economic choice for large numbers of consumers. Simply accelerating the pace of power electronics development is not the only technology breakthrough required to successfully market this technology. Automakers have yet to demonstrate air-cooled HEV technologies for high-power traction drives in consumer vehicles. Success in this area would allow an automobile manufacturer to leap-frog current HEV vehicles.

The most promising and highest priority technologies in sequential order are air-cooled inverters, high-temperature DC/DC converters, and the functional integration of inverters and converters to allow sharing of components. The fiscal year 2007

budget request will fund research and development efforts to build an all-silicon carbide (SiC) inverter and a high-temperature converter. Research and development of the functional integration of a high-temperature inverter/converter is planned for fiscal year 2007.

Question. Has Wide Bandgap Silicone Carbide technology been identified as a potential breakthrough technology for air-cooled vehicle-class power electronics? If so, what would its successful insertion into the air-cooled vehicle-class power electronics program mean for the United States in the global competition?

Answer. Yes, wide bandgap technology, such as silicon carbide (SiC), is one of several enabling technologies required to achieve a breakthrough in air-cooled power electronics for hybrid electric vehicles (HEVs), plug-in hybrid vehicles, and fuel cell vehicles. Current HEV technologies exceed the weight and volume targets by a factor of two, and exceed the cost target by a factor of four. Success with SiC technology alone, however, will not guarantee successful development of cost effective air-cooled devices. An air-cooled inverter offers the potential to reduce the size and weight of an inverter by 75 percent when compared to the current HEV technology. It also offers the potential for the inverter to meet the FreedomCAR cost target, with greatly improved reliability.

Question. What are your internal estimates of the potential, in terms of accelerating the schedule, if this technology were successfully demonstrated as an R&D breakthrough in the air-cooled vehicle-class power electronics? Would 3 to 5 years be a reasonable estimate? Does the current budget for "electronic power control" R&D provide sufficient funding to evaluate the potential breakthrough technologies, such as Wide Bandgap Silicone Carbide, that may provide the greatest potential for restoring U.S. leadership in the development of next generation HEVs?

Answer. The current budget for power electronics research and development provides sufficient funding to evaluate, research, and develop the technologies necessary for the next generation of hybrid electric vehicles (HEVs), including those required for high-temperature operation such as silicon carbide (SiC). The potential to accelerate the schedule and produce technology solutions in a 3- to 5-year period exists due to the combined government and industry efforts to advance SiC and other high-temperature components and devices required for next generation HEVs. There is increasing interest among firms that produce and use SiC devices in power electronics, and it is highly likely that the development schedule could be accelerated by appropriate teaming of suppliers, national laboratories, universities, and U.S. automakers. The DOE FreedomCAR and Fuel Partnership solicitation planned for late fiscal year 2006 is intended to stimulate the formation of such teams.

Question. Given the growing consumer acceptance for HEVs and the global competition in the HEV marketplace, has the FreedomCAR program assessed what it will mean to the United States, if we fail to regain our leadership in the critical R&D needed for the next generation of HEVs? Is there a concern that it will leave North American automotive manufacturing uncompetitive in price and technology?

Answer. Achievement of the 2010 FreedomCAR goals and the program's subsequent R&D will help assure that our domestic industry partners can successfully compete in both the United States and the world markets. One central objective of our 2010 goals is reducing the cost of HEV components so that the vehicle manufacturing cost allows them to be offered at prices competitive with standard vehicles.

Question. Please provide estimates of the additional Federal R&D investment that would be required to insert the highest priority potential breakthrough technologies for Advanced Power.

Answer. The Department's fiscal year 2007 budget request provides adequate funding to support research and development of hybrid electric and fuel cell propulsion technologies under the FreedomCAR and Fuel Partnership Program. It has been appropriately apportioned to address the technology challenges associated with the development of next generation hybrid electric vehicles (HEVs) with wide consumer acceptance.

QUESTION SUBMITTED BY SENATOR CHRISTOPHER S. BOND

Question. Mr. Garman, in response to my question to you regarding the administration's cuts to the Clean Coal Power Initiative (CCPI), you indicated that the Department of Energy had $500 million in un-obligated funds available. Where, specifically, in the Department of Energy are these un-obligated funds? What account? And, once identified, will the administration ask that these funds be re-programmed to the CCPI and other commitments in the President's Advanced Coal Research Initiative?

Answer. The un-obligated funds are in the CCPI and the original Clean Coal Technology Demonstration accounts and represent funds that have been formally committed to projects competitively selected under CCPI (and the predecessor programs, namely the Clean Coal Technology Demonstration and the Power Plant Improvement Initiative programs) that are either in negotiations for awards or projects that have been awarded but have not yet been completed. The structure of CCPI projects is such that some amount of un-obligated funds remains on projects until they enter their final budget phase. The Department is working to withdraw funds from projects in the CCPI and Clean Coal Technology accounts that are not going forward. The Department is also working to change CCPI contract provisions and other processes to strengthen its ability in the future to withdraw funds from stalled projects. If a project does not go forward and the Department withdraws funds, then the available funds will be put towards a future CCPI solicitation.

QUESTIONS SUBMITTED BY SENATOR WAYNE ALLARD

Question. Last year Congress passed legislation, at my request that authorized the Secretary of Energy to purchase essential mineral rights at Rocky Flats. This authority was provided for 1 year. I understand that minimal progress has been made so far.

What is the Department of Energy's plan for purchasing the essential mineral right at Rocky Flats? When do you expect this transaction to be completed?

Answer. The Department of Energy (DOE), in partnership with the U.S. Fish and Wildlife Service (USFWS) and Natural Resources Trustees (Trustees), has established and is currently executing a plan for purchasing the essential mineral rights at Rocky Flats.

The acquisition strategy for the mineral rights will be conducted in two phases. First, the Trust for Public Lands (TPL), a nonprofit group specializing in real estate acquisitions for Federal Government entities, will purchase the mineral rights from willing owners at fair market value, and will perform any appraisal updates required. In the second phase, these rights will be purchased by the DOE, with the funds provided in the Energy and Water Development Appropriations Act for Fiscal Year 2006.

At this time, TPL, DOE, and USFWS are finalizing a letter of agreement, stipulating the process for contacting willing sellers and ascertaining fair market values.

DOE and the USFWS fully expect to accomplish the acquisition of mineral rights well within the timeline mandated by Congress, and in harmony with the local stakeholder community.

Question. With regard to Environmental Management funding, why didn't the Department of Energy take the money it saved at Rocky Flats and use it to accelerate clean-up at other sites?

Answer. Prior to fiscal year 2001, the Department of Energy's (DOE) Environmental Management funding strategy was that as sites such as Rocky Flats completed cleanup, and their funding requirements decreased, those savings would be made available to other sites. However, beginning in fiscal year 2003, as part of the administration's Accelerated Cleanup Initiative, increased funding was provided to accelerate cleanup at most sites, rather than waiting until cleanup at sites such as Rocky Flats was completed. This allowed the DOE to address its urgent risks sooner and to accelerate cleanup.

Question. To what extent is DOE using contract mechanisms similar to those used at Rocky Flats to incentivize the contractor to achieve greater performance? What can we do to further encourage the accelerated clean-up of other sites?

Answer. The contract mechanisms used at Rocky Flats were part of a successful three-pronged management strategy. The first element used contract devices designed to provide incentives to the contractor to complete site closure within targeted costs and schedules. Second, it included application of innovative technologies and development of regulatory agreements that focused on end states. Third, it involved extensive stakeholder participation. The Department of Energy (DOE) currently is using the same elements employed at Rocky Flats for the Mound, Fernald, Columbus, and Oak Ridge projects.

The DOE is using its lessons learned from the Rocky Flats project to accelerate cleanup efforts at its other sites. It is transferring Rocky Flats personnel to support closure at other sites and is providing lessons-learned seminars to managers at other sites. The DOE also developed and is widely disseminating lessons-learned documents and a digital video disk explaining its cleanup and closure successes. The DOE continues to examine its cleanup work at each of the Environmental Management sites to identify areas where an accelerated approach is feasible.

The former Rocky Flats weapons contractors (Dow and Rockwell) and the property owners near Rocky Flats have been engaged in a protracted legal battle over whether these property owners should be compensated for the damage caused by the environmental contamination at Rocky Flats. Last February, a jury awarded the property owners an incredible sum of over $550 million in damages. I understand the contractors are now appealing this decision. It seems to me that only people who are benefiting from this battle are the lawyers who so far have taken $100 million in legal fees. And, because Dow and Rockwell are indemnified by the Federal Government, the real losers are the American taxpayers.

Question. To what extent is DOE trying to settle this case? Is there any evidence that suggests that these properties suffered extensive contamination?

Answer. An appeal has not yet been filed in this case because a judgment has not yet been entered. One reason for that is that the jury's verdict needs to be adjusted by the court to eliminate duplicative damages and punitive damages that are in excess of what Colorado law allows. When a judgment is entered, it should be for substantially less than the $550 million figure that has been reported. It is also not the case that the legal fees that have so far been incurred in this litigation amount to $100 million. That said, this litigation has clearly already been very costly for the American taxpayers, and if an adverse judgment were to be upheld on appeal the taxpayers will be, as your question says, the "real losers." Prior to the trial in this case we were advised that the plaintiffs would be willing to consider settling their claims for approximately $100 million. We believed then that a settlement anywhere near that amount could not be justified and, notwithstanding the jury's verdict, that remains our view. In part, this is because there is no evidence that properties in the vicinity of Rocky Flats suffered extensive contamination. Just last year the Agency for Toxic Substances and Disease Registry (ATSDR) issued a report concluding that the "studies and sampling data generated by numerous parties, including the U.S. Environmental Protection Agency (EPA), the Colorado Department of Public Health and Environment (CDPHE), the U.S. Department of Energy (DOE) and its contractors and local community groups, universities and private researchers . . . paint a consistent picture of the public health implications of environmental contamination" near Rocky Flats, and that picture is that "past, current and future exposures are below levels associated with adverse health effects." In fact, ATSDR reported that "estimated total exposures to radiation from the soil . . . are 3,000 times lower than the average exposures to ionizing radiation experienced by United States residents."

QUESTIONS SUBMITTED BY SENATOR MITCH MCCONNELL

Question. In fiscal year 2005, this committee generously approved my request to increase funding for cleanup at the Paducah Gaseous Diffusion Plant to accelerate the disposal of legacy waste and decommissioning activities at the site. Can you update the committee on how those funds have been used and what progress has been made in accelerating these projects?

Answer. The following progress has been realized to date at the Paducah Gaseous Diffusion Plant:

Legacy Waste Disposal Acceleration

The Department of Energy (DOE) disposed of more than 1,900 drums (over 1,000,000 pounds) of stored uranium by-products in fiscal year 2006, accelerating this action by more than 2 years.

DOE accelerated by 3 years the disposal of more than 24,000 cubic feet of low-level radioactive waste which is stored outside.

Decontamination and Decommissioning (D&D) Acceleration

The C–410–A Hydrogen Holder Tank has been completely removed, 8 years ahead of the original schedule.

The characterization and disposal of waste located in three DOE Material Storage Areas (DMSA) is ahead of the original schedule and is expected to be completed in fiscal year 2006. More than 80 percent of the targeted waste has been processed and the outside DMSA has been completely emptied.

The C–603 Nitrogen Facility removal is complete with the exception of a small amount of residual waste. This project was accelerated by approximately 5 years.

The C–402 Lime House removal is on schedule for completion in fiscal year 2006, 2 years early. A streamlined regulatory approval process was implemented in cooperation with the State and Federal regulators.

A project to remove the C–405 Incinerator is undergoing final regulatory approval with actual decontamination and decommissioning (D&D) scheduled to begin in late

fiscal year 2006 and be completed in fiscal year 2007. This schedule is an acceleration of approximately 3 years.

DOE is also working to get final approval from the regulators to remove the C–746–A West-End Smelter. The D&D should begin in early fiscal year 2007 and will be complete in fiscal year 2007, 2 years ahead of schedule.

I remain concerned by the continuing delays in the construction of the Depleted Uranium Hexafluoride (DUF_6) conversion facility at the Paducah Gaseous Diffusion Plant. Congress has twice enacted legislation I authored to make sure this project moves forward in a safe and expeditious manner. This committee has met or exceeded funding requests for this project in each fiscal year. Yet in its fiscal year 2007 budget justification, DOE again pushes the construction completion date back to November of 2007 and to start operations in the spring of 2008.

Question. What are the reasons for the delays? What assurances can the Department offer this committee that it will be able to meet this deadline? Given that one of the deadlines DOE has met on this project was the statutory deadline to begin construction by July 31, 2004, does Congress need to legislate a mandatory date for start of operations?

Answer. On September 30, 2005, the Deputy Secretary approved the Project Performance Baseline and Start of Construction for the depleted uranium hexafluoride (DUF_6) project with commencement of operations projected for April 2008. Previous schedules were based on conceptual and preliminary designs that had not been validated by the Department of Energy (DOE), unlike the current approved schedule which is based upon the final conversion facility design. The need to adjust the original schedule reflects the considerable uncertainty associated with large construction projects during early design stages. DOE has high confidence in the new schedule now that the design is complete. The schedule includes 4 months of schedule extension necessary to incorporate design and fabrication activities to achieve greater assurance of safety for chemical operations during natural phenomena events, such as earthquakes or high wind events. The schedule also includes 5 months of contingency to account for unexpected events, to give DOE the confidence in our commitment to this approved baseline. Schedule contingency was not included in previous schedules.

Since approval of the Project Baseline in September 2005, we have seen continuous progress at the site, including construction of the conversion buildings and steady progress on the warehouse/maintenance and administration buildings. The major construction is more than 35 percent complete. Equipment procurement contracts for about 75 percent of the major equipment have been awarded, totaling more than $70 million. In addition, approximately $60 million in subcontracts for construction and fabrication have been awarded to date. We are committed to our schedule, and to commence operations in a manner that is safe and protective of the community.

Question. Like many members of the Paducah community, I am concerned about the economic impact of the plant possibly ceasing enrichment operations in 2010. In its fiscal year 2007 budget justification. DOE notes that portions of the Paducah site "will be used to promote the development of private-sector enterprises in ways that are consistent with and complementary to current site missions". Given that the Paducah has a skilled workforce and an acceptance of nuclear operations not found in other parts of the country, has the Department identified what those sorts of "private-sector enterprises" might be?

Answer. The Department of Energy (DOE) is not conducting re-industrialization activities at the Paducah site. The availability of this large cleaned-up industrial site is expected to be promoted as an attractive resource by the community in its long-term industrial development after DOE has completed cleanup. DOE anticipates that its final cleanup activities will support future community private sector development initiatives.

SUBCOMMITTEE RECESS

Mr. GARMAN. Thank you, Mr. Chairman.

Senator DOMENICI. We stand in recess.

[Whereupon, at 12:03 p.m., Thursday, March 30, the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER, AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 2007

WEDNESDAY, APRIL 5, 2006

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 2:40 p.m., in room SD–124, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman) presiding.

Present: Senators Domenici, Craig, Bond, Allard, Murray, Dorgan, and Landrieu.

DEPARTMENT OF DEFENSE—CIVIL

DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS—CIVIL

STATEMENT OF JOHN PAUL WOODLEY, JR., ASSISTANT SECRETARY OF THE ARMY (CIVIL WORKS)

OPENING STATEMENT OF SENATOR PETE V. DOMENICI

Senator DOMENICI. The hearing will please come to order. Because of schedule problems, we are going to let some Senators speak out of order. Senator Bond would like to make an opening statement at this point. I yield to you, Senator.

STATEMENT OF SENATOR CHRISTOPHER S. BOND

Senator BOND. Mr. Chairman, I thank you very much for your kind courtesies.

Mr. Woodley, we have had long discussions about the need for locks on the Mississippi and Illinois Rivers, and one of these days I hope we will have an authorization coming out of our Environment and Public Works Committee which will allow this committee to do the vitally important work it should do in funding our vitally needed Nation's infrastructure.

I have here in my hand an article from the Wall Street Journal which I would share with you and those with whom you discuss. It's called "As Utilities Seek More Coal, Railroads Struggle to Deliver." It reports that their shipping fees are going up a reported 20 to 50 percent. The Department of Transportation predicts that commercial shipping volume over the next 20 years will increase by 70 percent. Most people, at least outside Washington, recognize the

bulk commercial freight cannot be emailed, so transportation capacity is an issue that will demand leadership, and the sooner the better.

Last month Secretary Johans of the Department of Agriculture, Deputy Connor, and Chief Economist Dr. Keith Collins testified before the Appropriations Committee. Mr. Woodley, if you and your team are not routinely in touch with Collins I would be very disappointed. Dr. Collins has been Chief Economist or in that office serving at least four or five presidents.

He testified again that any 50-year study is highly speculative, noting that even the 10-year forecasts USDA does are speculative and that 10 years is heroic enough. However, he is clear that they do not see stalled or dwindling or flat export activity through the gulf. In fact, he said they see a substantial increase, in testimony previously he said 40 to 45 percent in corn alone, and he sees a good long-term market for grains and oilseeds in the world and he noted that having efficient infrastructure will help make that possible.

As we all know, the demand for goods, agricultural goods, one item transported on the rivers, depends upon transportation. In good years ag exports exceed imports by $30 billion, bringing great economic boost to the breadbasket of America as well as helping our balance of payments.

Secretary Johans agreed firmly that the existing lock system, built 70 years ago, has proved an important and wise investment and that should be obvious even to the fiercest opponents of commercial shipping.

Mr. Woodley, with help of able staff I want to introduce you to Major Charles L. Hall, Rock Island Engineer from 1927 to 1930. He advised President Hoover and Congress in 1929 that the proposed system, the one which currently exists on the Mississippi River, was not economically feasible and argued that "limited barge traffic did not indicate that a viable barge industry would develop." Fortunately, President Hoover and the Congress ignored the advice and President Hoover said modernization would "put the rivers back as great arteries as commerce after a half century of paralysis."

Now, with 80 million tons moved annually and two-thirds of our exported grain moving through that system, it is clear that the Congress and President Hoover were wise to ignore the expert advice of Major Hall. I suspect and fear that the Major may have a grandchild working dutifully somewhere, maybe at the Office of Management and Budget.

So I ask that you let history help inform your future decisions and that you consider that we must not only try to predict the future, but shape the future. In some cases, opinions of experts deserve to be very strongly considered just before they are very thoroughly rejected. I believe that some 80 members of the Senate believe that we should pass a Water Resources Development Act which will enable my good friend the outstanding chairman to act appropriately in this subcommittee.

I thank you, Mr. Chairman, for your comments.

Senator DOMENICI. Well, I thank you for your comments, and I just want to ask you, since you are one of the proponents, and quite

properly and appropriately, of the WRDA bill, what is your—in 2 minutes, what is holding it up?

Senator BOND. Initially there were objections from the Office of Management and Budget. We had an opportunity to go above their heads to policymakers who have a broader perspective and they agreed that the Office of Management and Budget would not threaten a veto. Currently there are, as I said, 80 signatures on a letter to the Republican and Democratic leaders saying that we need to move the bill. There are still holds in the Senate from people who want us to go back to the horse and buggy days and rely on overcrowded railroads and tremendously crowded highways to ship not only grain for the export market, but the tremendous amount of commercial commodities.

Senator DOMENICI. Those are Senators?

Senator BOND. Those are Senators.

Senator DOMENICI. We do not know who they are at this point and you cannot get them released. We are stuck.

Senator BOND. We intend to do everything we can and ask the leaders to call for a vote if the holds are not relieved and not pay attention to the holds, and we hope that the Office of Management and Budget will not follow Major Hall and have a last minute reconversion to their opposition.

Senator DOMENICI. All right.

Senator BOND. Thank you, sir.

Senator DOMENICI. Having said that, the Democrats are present. When I opened they were not. I apologize for that. It was only 3 minutes, Senator, and then you came.

I am not going to have any opening statements. I think we are going to run out of time. Any opening statements desired on your side? I knew Senator Bond had to say something or else we would have a——

Senator DORGAN. Did he talk about the Missouri River management? If so, I will have an opening statement.

Senator DOMENICI. No.

Senator DORGAN. If not, I will not.

Senator DOMENICI. No. But I knew if I did not——

Senator BOND. I will be sure and cc you.

Senator DOMENICI. I knew if I did not let him speak the way he wanted to we would have problems.

How about over here?

STATEMENT OF SENATOR WAYNE ALLARD

Senator ALLARD. Mr. Chairman, I have a very brief statement.

Senator DOMENICI. Let us do it.

Senator ALLARD. Mr. Chairman, first of all I want to thank you for holding the hearing. The Corps of Engineers does a great deal for the country, as well as for Colorado, but I must express my disappointment with the fact that funding to complete the Fountain Creek watershed study was not included in the President's proposed budget again this year. The study was originally contracted at $2.9 million with a 50 percent Federal, 50 percent local funding split. The locals have long ago put in over $1.4 million, but the Federal Government has not lived up to its side of the bargain.

In what should be the final year of the study, it mystifies me why the Corps did not place enough value on the study to include it in the budget request. But I will have questions on that later on, Mr. Chairman. Thank you for your tolerance.

Senator DOMENICI. Thank you very much.

On the Democrats' side, Senator Mary Landrieu.

PREPARED STATEMENT OF SENATOR MARY L. LANDRIEU

Senator LANDRIEU. Mr. Chairman, I have a statement for the record, but I do want to say that I will come back after the vote. I have a series of questions that really do need answers today based on the situation that we are facing in the gulf coast and some charts I want to share with you, Mr. Chairman, and the committee about the backlog of current projects.

[The statement follows:]

PREPARED STATEMENT OF SENATOR MARY L. LANDRIEU

Mr. Chairman, thank you for calling this hearing to review the President's budget for the Army Corps of Engineers.

Before I comment on any specific budget matters, I wish to express my appreciation for being a member of this subcommittee. Its jurisdiction over both energy and water are matters of monumental concern to my State of Louisiana, the Gulf Coast, and our Nation. Now is a critical time for action on these issues.

Because of these monumental issues and because of the relationships with you and Senator Reid that we have built, I sincerely look forward to working with both of you. I appreciate the time that each of you have taken over the years to join me in Louisiana to see the Nation's worst coastal erosion as well as successful projects such as the SELA flood control project.

For many years, Congress has received the administration's request for funding for the Civil Works program of the Army Corps of Engineers and has increased this request. In recent years, Congress has appropriated approximately 10 percent to 15 percent more funding. Once again, the administration has requested less funding for fiscal year 2007 for the Corps than was provided by Congress for the current fiscal year.

Simply stated, the administration's fiscal year 2007 budget request for the Corps puts the Nation at risk, and we cannot be complacent. Hurricanes Katrina and Rita shred that curtain of complacency and gave the Nation a look at the inadequate infrastructure as it relates to water management and flood protection. We must act.

Underfunding infrastructure puts our Nation at risk. Hurricanes Katrina and Rita exposed this risk. These storms were not the real culprits. Instead, the real culprit was the failure to fund a levee system that would have protected us against hurricanes such as these.

This failure caused the deaths of more than 1,000 people in Louisiana alone. More than 215,000 homes were destroyed with thousands more damaged. Countless businesses, churches, and schools were wiped out. The cost of recovering from this levee failure will be hundreds of billions of dollars. The cost will be far more than it would have cost to build the infrastructure that would have prevented this catastrophic loss.

The impact of the administration's inadequate Corps funding requests are also felt throughout the Nation on vital projects causing a delay in their completion and resulting benefits. Many of these projects are physically located in Louisiana but greatly impact the entire Nation.

For example, numerous hurricane protection and flood control projects in Louisiana are intended to protect millions of Americans living in coastal Louisiana. These projects are also intended to protect energy infrastructure that supplies oil and gas throughout the Nation.

The existing backlog of authorized projects combined with the WRDA authorizations currently under consideration amount to more than $50 billion. Yet, the administration asks for only $1.5 billion for construction in fiscal year 2007. At this pace, it will take at least 35 years to construct the backlog of projects assuming no inflation and no new projects are added during that time.

Hurricanes Katrina and Rita showed that we have not provided enough funding for levees and pumps. The current cost of recovering from the destruction caused

by these storms shows that it is more expensive to pay for re-building than for prevention.

Another component of protecting Louisiana and the Nation is the coastal restoration effort to save America's Wetland.

The Louisiana Coastal Area comprises one of the Nation's largest expanses of coastal wetlands. As an environmental treasure, it supports a diverse collection of migratory birds, fish, and other species. As a productive natural asset, the Louisiana Coastal Area supports an extensive energy infrastructure network responsible for an estimated 20 percent of our Nation's energy and provides over 20 percent of the seafood consumed in the United States. Additionally, offshore oil and gas production off of Louisiana's coast is one of the U.S. Treasury's largest revenue sources. This production contributes approximately $6 billion a year to the Federal Government, and this amount is rising.

Despite these significant national contributions made by the Louisiana Coastal Area and its resulting standing as America's Wetland, it accounts for 90 percent of the Nation's total coastal marsh loss. This destruction puts all of its national benefits at risks. Accordingly, the Corps along with the State of Louisiana has been engaged in the development of a comprehensive coastal restoration plan. Hopefully, implementation of this plan will begin soon, and this Congress will provide the Corps with the funding necessary to do the job. I will continue to work with all of you toward achieving this vital goal.

Another example of a project physically located in Louisiana having national implications is the Inner Harbor Navigation Canal (IHNC) lock project. This project at the Port of New Orleans was wrongly zeroed out in the President's budget. Congress first authorized the replacement of this lock in 1956! It is a project of national significance that impacts trade in over 25 States on a daily basis. In fact, over 16 million tons of cargo move through this lock each year. Additionally, its completion directly relates to closing the Mississippi River Gulf Outlet which has destroyed more than 27,000 acres of wetland and thereby eliminated a hurricane buffer to metro New Orleans.

In closing, Hurricanes Katrina and Rita show us that we must invest more in our infrastructure. We either heed their warning or peril.

Finally, Mr. Chairman, I thank you for your continued leadership on the Nation's water issues. I look forward to the testimony of our witnesses and the opportunity to question them when appropriate.

Senator DOMENICI. Senator Craig.

PREPARED STATEMENT OF SENATOR LARRY CRAIG

Senator CRAIG. Mr. Chairman, I will ask unanimous consent that my full statement be a part of the record, but I want to recognize when a job well done is well done and completed, and I want to thank the Corps for their completing of the channel improvement project on the Snake River between Idaho and Washington. Critical importance to the aid of transportation in that region. I want to thank you for the work done.

Thank you, Mr. Chairman.

Senator DOMENICI. Your statement is made a part of the record.

[The statement follows:]

PREPARED STATEMENT BY SENATOR LARRY CRAIG

First, I want to take a moment and thank all of those in the U.S. Army Corps of Engineers who have served their country in Iraq. I also want to commend those who served their fellow Americans in the wake of devastating hurricanes. It has been a trying year for many, and I appreciate the support you have provided those in need.

I also want to thank the Army Corps of Engineers for all the work they have done in many of our rural communities to get drinking and wastewater infrastructure updated. In my State, rural water infrastructure is an increasing need, with many rural communities struggling with funding and expertise to fulfill their responsibility of providing safe and reliable drinking water. As infrastructure continues to age and water quality standards rise, an agency like the Corps becomes more and more vital, and I hope to continue working with the Corps to see our water infrastructure meets the appropriate standards.

Additionally, I want to thank the Corps for completing the channel improvement project on the Snake River between Idaho and Washington. This project has aided farmers by providing a safe, efficient means of shipping to meet demands, not only for our country, but also other countries as well. As gas prices continue to rise and roads become increasingly crowded, barges will serve as a critical and efficient means of transporting commodities, and I will continue working with the Corps on similar projects.

I have a couple of concerns, one of which is the change in the Corps' budgeting practices. In the past, the Corps enjoyed considerable flexibility and were able to reprogram funds fairly easily, but with the changes, that will no longer be the case. At the appropriate time, I'll have a question about that issue.

I look forward to hearing your testimony.

Senator DOMENICI. Senator.

STATEMENT OF SENATOR PATTY MURRAY

Senator MURRAY. Yes, Mr. Chairman. I just wanted to welcome Secretary Woodley and General Strock. Thank you for your testifying today. I think what happened in the last few months in Senator Landrieu's State and elsewhere really showed all of us how important the work is you do and how important it is that we maintain that.

I want to compliment you for the three district offices that operate in my State. We have a really varied landscape when it comes to Corps projects. We have got hydroelectric, flood control, navigation, irrigation, and the Army Corps work is really essential to our economy and to our ability to maintain the critical infrastructure in our community. We have the Portland District that is maintaining the Columbia River dredging and the jetties, repairs to the jetties, critical for safety. The Seattle District is working on some really complex flooding issues and the Walla-Walla District is providing some really important engineering expertise for us for the waste treatment plant out of Hanford.

So I want to compliment you on that work, but I just want to say I have another hearing, but I want to say publicly I am deeply concerned about the investment to our infrastructure, to the Corps. We have got to do better than what we have been presented, because we have to continue, as I think the Senator from Louisiana well knows, to maintain the critical infrastructure we have and to make the important investments in our Nation's future. So I will join with all of you in working towards that direction.

Thank you, Mr. Chairman.

Senator DOMENICI. Very well. Thank you.

Well, I have a long analytical statement that, it would not help here. The atmosphere has been so nice that it would make things look very, very bad. Just suffice it to say that I think the way you handled the budgeting is a mess, and I do not think that you can expect us to do it the way you recommended.

You are short of money and we know that. The President did not fund—did not put in as much as we need. But the way you went around, went about trying to make the money work in my opinion has made matters worse. So do not look for us, for it coming out the way you recommended. It is going to come out, but with no damage, we hope.

My statement and Senator Cochran's statement will be made part of the record.

[The statements follow:]

PREPARED STATEMENT OF SENATOR PETE V. DOMENICI

Good afternoon—the hearing will come to order.

Today, the subcommittee will take testimony on the fiscal year 2007 budget request for the U.S. Army Corps of Engineers.

Our panel will consist of witnesses from the U.S. Army Corps of Engineers.

Testifying for them will be: John Paul Woodley, Principle Deputy, Assistant Secretary of the Army for Civil Works, and Lieutenant General Carl A. Strock, Chief of Engineers for the U.S. Army Corps of Engineers.

Mr. Woodley, General Strock, thank you for appearing before us today.

The President's budget for the Corps of Engineers proposes $4.73 billion, which is $596 million below the fiscal year 2006 enacted of $5.33 billion after rescission.

PERFORMANCE-BASED BUDGETING

The Corps' budget was again prepared using performance-based budgeting. I have several concerns with developing the budget in this manner. This method seems to concentrate budget development at OMB rather than at the District level where it belongs.

Again for fiscal year 2007, the Remaining Benefits to Remaining Costs Ratio is the primary criteria for prioritizing funding decisions. There does seem to be more of an effort to ensure obvious national priorities were not overlooked, but no attempt to capture traditional items of importance to Congress.

For example, no attention has been given to workforce distribution in project selection. Congress has repeatedly demonstrated a desire for a geographically diverse Corps of Engineers organization. In order to maintain that distribution, a suite of projects needs to be selected to maintain the workforce at a stable level. The budget request does not consider this factor.

PROJECT SUSPENSIONS

The administration has budgeted $41.4 million to suspend/terminate 10 construction projects that have been budgeted in the past in order to redirect resources to complete high-priority projects. However the 532 projects and studies that were included in the fiscal year 2006 Energy and Water Act are not addressed by the fiscal year 2007 Budget Request. It is as if termination of these items are either free or Congress's problem. I believe when the President signs an appropriation bill, all of those studies and projects become the joint property of the administration and Congress. Treating Congressional priorities differently will lead to consequences.

MAJOR ISSUES BY APPROPRIATION ACCOUNT

The General Investigations account is a disaster. Of the $94 million requested, only $16.7 million is provided for ongoing study efforts nationwide. This compares to $102 million in the current fiscal year.

The budget request shifts projects totaling $342 million from the Construction, General account to the Operations and Maintenance, General account. Beach renourishment due to navigation impacts, Endangered Species Act (ESA) compliance, beneficial use of dredged material and major rehabilitations are the categories of the items shifted.

A large portion of the shifted funds is Endangered Species Act compliance items. An example is Columbia River Fish Mitigation. In fiscal year 2006 this was an $85 million CG line item. In fiscal year 2007, it is distributed across eight O&M projects for the Columbia River. There is no easy way to determine how much funding is for these mitigation activities and how much is for O&M. It is all considered O&M.

The other category of funding shifted to O&M is for major rehabilitations of locks and dams. Gentlemen, I have been around long enough to remember when these projects were funded in the O&M account. We moved them to the Construction, General Account and allowed half the costs to come from the Inland Waterway Trust Fund because they were not being sufficiently budgeted in O&M. Now, because of the backlog in the CG account, you are proposing to move them back to O&M. Why not try budgeting sufficient funding for them rather than playing three-card monte?

There were a couple of increases proposed in your budget for fiscal year 2007.

The budget proposes $173 million for the Regulatory Program versus $158 million enacted after rescission, a 9.5 percent increase. This account has increased from $117 million since fiscal year 2000, by far the largest percentage growth in any Corps account over the same period, yet complaints about permits seem to be on the rise. I have been made aware several issues in New Mexico over the last 3

months. General Strock, you and I will need to have further discussions about this at another time.

The General Expenses account traditionally funds the Corps Headquarters and Division offices is proposed at $164 million, a 7.9 percent increase. However, this includes $6 million for the Office of the Assistant Secretary of the Army. When you compare the fiscal year 2006 enacted General Expenses of $152 million to the fiscal year 2007 proposal of $158 million, it is only a 3.9 percent increase.

Secretary Woodley, I understand that this $2 million increase in your budget over the fiscal year 2006 enacted of $4 million is to cover joint costs previously covered by the Department of the Army.

As you are aware, this office was funded in a separate account in the fiscal year 2005 and 2006 Energy and Water Acts. Prior to fiscal year 2005, your office was funded in the Defense Army OMA account. I think we should look at moving funding for your office back to the Defense Army OMA account due to your other duties as Assistant Secretary in addition to the Corps Civil Works Program.

You should know that I will oppose the regionalization of the O&M budget for fiscal year 2007. This method of displaying O&M effectively disguises the underfunding of O&M projects and allows the Corps the ability to freely move funds around. It appears that you invented a whole new way to aggregate and appropriate O&M just so you could get around the Congress's fiscal year 2006 reprogramming guidance.

The fact that you went to this much trouble in this budget proposal demonstrates our need to seriously reexamine reprogramming guidance as we prepare the fiscal year 2007 bill.

Finally, we will need to revisit contracting and reprogramming issues for fiscal year 2007. It is clear to me, that the language agreed to in fiscal year 2006 is not improving the management of the Civil Works program. If anything, it appears to be hindering getting work accomplished.

Secretary Woodley, General Strock, your full statements will be made a part of the record. I would ask that you summarize your statements.

PREPARED STATEMENT OF SENATOR THAD COCHRAN

Mr. Chairman, I thank you for holding this hearing and thank the witnesses for their willingness to appear today before the Energy and Water Subcommittee.

While I understand that this hearing is being held to consider the President's budget request for fiscal year 2007, I must mention at the outset the good work of the Corps of Engineers in my home State of Mississippi in the wake of Hurricane Katrina. I know there have been some concerns over the speed with which the Corps has had debris removed and the number of out-of-State companies that are leading the debris removal effort.

The Vicksburg District has been thoughtful in their proposal to use Mississippi contractors for smaller, more manageable contracts. The Government Accountability Office recently agreed that set-aside contracts are allowed in Mississippi, and this action will result in local people leading local debris removal contracts. I think this is good for recovery and good for Mississippi victims as well as businesses in our State. Thank you for this assistance.

I understand that the Corps of Engineers continues to use a performance based budgeting formula, which has led to the proposal to terminate 10 projects this year. Last year you proposed to terminate 35 projects. This means that important projects that were previously budgeted for by the Corps are, under this budget submission, not going to move forward.

Another area of concern is the language that was included in the fiscal year 2006 Energy and Water Appropriations bill regarding the Corps of Engineers' use of the continuing contract clause and their reprogramming guidelines. My constituents in Mississippi are already feeling the negative impacts of this language, and it is my understanding that the Corps will likely carry over large amounts of the historic funding levels provided in the current year's appropriations bill.

I appreciate the efforts of the Corps of Engineers but worry about inadequate funding of important missions under your jurisdiction. The Corps is charged with improving safety and security for our Nation's citizens, and I hope that this committee will provide the resources necessary complete these missions.

STATEMENT OF JOHN PAUL WOODLEY, JR.

Senator DOMENICI. Having said that, we are ready for you to speak. I gather that you want to do it in the normal order; is that

correct, where you want the Honorable Paul Woodley to speak first and then the General? Is that what we want to do?

General STROCK. Yes.

Senator DOMENICI. All right. Mr. Secretary, make your statement brief. It will be made part of the record.

General, we look forward to hearing from you next. Make your statement long. It will be made a part of the record also.

Mr. Woodley, please proceed.

Mr. WOODLEY. Thank you, Mr. Chairman. I appreciate the opportunity to testify today and ask that the full statement be put in the record.

Our 2007 budget includes about $4.7 billion——

Senator DOMENICI. Pull the mike up a little. Thank you very much.

Mr. WOODLEY [continuing]. A 5 percent increase from last year. We provided a 5-year budget plan along with the other budget justification materials, including three potential 5-year funding scenarios for planning purposes and analytical purposes.

The budget includes an increase of about $280 million for construction projects compared to the fiscal year 2006 budget. The funding is allocated according to guidelines that emphasize economic returns, reduction of risk to human life, and ecosystem restoration benefits.

Mr. Chairman, the budget provides $173 million to the Corps' regulatory program to protect wetlands and other waters of the United States. This represents a $15 million increase compared to fiscal year 2006 appropriations and a 20 percent increase in budgeted funding for the regulatory program over the last 3 years. The funding will be used to reduce permit processing times, improve aquatic resource protection through monitoring and compliance activities, and advance watershed approaches to permitting.

The budget also reassigns about $340 million of work at existing projects from the construction account to the operation and maintenance account. This reassignment improves accountability and oversight, reflects the full cost of operation and maintenance, and supports an integrated funding strategy for existing projects.

The operation and maintenance budget has been revamped and is presented by major river basin and mission areas. This lays the groundwork for improved management of appropriated funds and more strategic formulation of future budgets.

The budget includes increased funding for preparedness, response and recovery activities related to flood and coastal storm emergencies. The budget does not include funding for recovery from last year's hurricanes since supplemental appropriations are being sought to provide that funding.

PREPARED STATEMENT

In summary, Mr. Chairman, the budget and the 5-year plan incorporate performance budgeting principles, allocate funding to activities with the highest returns, and advance important national objectives.

Thank you very much.

[The statement follows:]

PREPARED STATEMENT OF JOHN PAUL WOODLEY, JR.

Mr. Chairman and distinguished members of the subcommittee, thank you for the opportunity to testify before the subcommittee, and to present the President's budget for the Civil Works program of the Army Corps of Engineers for fiscal year 2007.

OVERVIEW OF FISCAL YEAR 2007 ARMY CIVIL WORKS BUDGET

The fiscal year 2007 budget for Army Civil Works provides funding for development and restoration of the Nation's water and related resources within the three main Civil Works program areas, namely, commercial navigation, flood and coastal storm damage reduction, and aquatic ecosystem restoration. The budget also supports hydropower, recreation, environmental stewardship, and water supply services at existing water resources projects owned or operated by the Corps of Engineers. Finally, the budget provides for protection of the Nation's regulated waters and wetlands; cleanup of sites contaminated as a result of the Nation's early efforts to develop atomic weapons; and preparedness, response, and recovery activities related to flood and coastal storm emergencies.

The budget does not fund work that should be the responsibility of non-Federal interests or other Federal agencies, such as wastewater treatment, irrigation water supply, and municipal and industrial water supply treatment and distribution.

The fiscal year 2007 budget includes new discretionary funding of $4.733 billion, the highest civil works budget transmitted to Congress by any President. The estimate for fiscal year 2007 outlays is $5.846 billion. Enclosure 1 displays the current estimate for the distribution of new discretionary funding among eight appropriation accounts, eight program areas, plus executive direction and management, and five sources including the general fund of the Treasury and trust funds. Enclosure 2 is a crosscut between appropriation accounts and program areas.

A 5-year budget development plan (FYDP) is being provided, as called for in the fiscal year 2006 Energy and Water Development Appropriations Act Conference Report. The FYDP includes three scenarios or projections—one based on the President's proposed fiscal year 2007 budget, one above that level, and one below that level. The projections are formula driven. They do not represent budget decisions or budget policy beyond fiscal year 2007 but they can provide perspective on the Army Civil Works program and budget.

EMERGENCY SUPPLEMENTAL APPROPRIATIONS

To date, the Corps has received $3.3 billion in emergency supplemental appropriations to address the impacts of the 2005 hurricane season. In addition, on February 16 of this year the President transmitted to Congress his request for $1.46 billion in additional emergency supplemental appropriations to strengthen and improve hurricane and storm protection in the greater New Orleans metropolitan area.

PERFORMANCE-BASED BUDGETING

The fiscal year 2007 budget builds upon lessons learned from the 2005 hurricane season, one of which is the importance of setting spending priorities to meet water resources needs that are the most compelling from a national perspective.

One of my priorities for the Army Civil Works program is to develop the Civil Works budget and manage the program based on objective performance measures. The fiscal year 2007 budget reflects significant progress toward this goal, by focusing funding those activities that are expected to provide the highest net returns to the Nation.

The fiscal year 2007 budget also supports performance-based budgeting by funding ongoing efforts to develop better risk-based facility condition indices and asset management systems. These analytical tools will improve our ability in the future to develop long-term asset management strategies and establish priorities for the operation, maintenance and management of Civil Works assets. Our goal is to begin using these improved analytical tools within 2 years.

The focus on Civil Works program performance has a number of foundations. First, the Civil Works Strategic Plan, which was updated in 2004, provides goals, objectives, and performance measures that are specific to program areas as well as some that are crosscutting. Second, each program area is assessed using the Program Assessment Rating Tool (PART). Both the Civil Works Strategic Plan and the PART-based program evaluations are works in progress and will continue to be updated.

The Environmental Stewardship sub-program and the Formerly Utilized Sites Remedial Action Program were assessed in the most recent assessment period (2005). Based upon the findings of these program assessments, the Corps is taking follow-

up actions to address identified problems. Summaries of all completed civil works program assessments can be found on the administration's new website, www.ExpectMore.gov.

Budget decisions link to performance in a number of ways. First, alternative funding levels relate to alternative performance targets, or levels of outputs and outcomes, as measured by the program area metrics. Second, related metrics and decision guidelines (see "Construction," below) are used to rank work within each account or within each program area.

CIVIL WORKS PROGRAM IMPROVEMENTS

The fiscal year 2007 Civil Works budget proposes five program improvements, as discussed below.

Funding Activities in the Operation and Maintenance Account

In addition to introducing the concept of watershed and system budgeting for operation and maintenance, described in detail below, the budget proposes to fund four types of operation and maintenance-related activities in the Operation and Maintenance account, rather than in the Construction account as has been the case in the recent past. It is appropriate to assign responsibility for these activities to the Operation and Maintenance program, both because of the nature of the work and because of its integral connection to operation and maintenance. This reassignment improves accountability and oversight, reflects the full cost of operation and maintenance, and supports an integrated funding strategy for existing projects. Total fiscal year 2007 funding for the activities being reassigned to the Operation and Maintenance program is about $340 million. The four types of activities are described in greater detail below.

First, the Operation and Maintenance account would fund activities to comply with Biological Opinions at existing projects pursuant to the Endangered Species Act. These activities facilitate the Corps continuing to operate its existing multi-purpose projects, principally in the Columbia and Missouri River Basins. The compliance costs would be allocated among the project purposes of the operating projects.

Second, the account would fund rehabilitation of existing projects. Rehabilitation work would compete for funding on a level playing field with other operation and maintenance activities. The O&M program would consider each potential investment and develop recommendations based on a long-term strategy for maintaining the existing infrastructure. Fifty percent of the costs of rehabilitations for inland waterway projects would be derived from the Inland Waterways Trust Fund, just as was the case when they were funded in the Construction account.

Third, the account would fund the construction of facilities, projects or features that use maintenance dredging material. These include beneficial uses of dredged material for island and marsh creation, shore protection, and other environmental purposes pursuant to the Section 204/207/933 Continuing Authority Program and specific authorizations (such as for the Poplar Island, Maryland, project). These also include dredged material disposal facilities for material from maintenance dredging (including Indiana Harbor, Indiana, which had been line-item budgeted in the Construction account). Funding for the dredged material disposal facilities would be derived from the Harbor Maintenance Trust Fund, just as was the case when they were funded in the Construction account.

Fourth and finally, funding in the account would be used to replace sand lost from shores due to the operation of Federal navigation projects (navigation mitigation). This activity would be carried out pursuant to specific authorizations for shore protection projects that involve navigation mitigation, and pursuant to the Section 111 Continuing Authority Program. The budget proposes that funding for navigation mitigation be derived from the Harbor Maintenance Trust Fund. The estimated amount for fiscal year 2007 that would be derived from the trust fund for this purpose is $27 million.

Accompanying the budget is proposed appropriations language that would clarify that these activities are to be funded in the Operation and Maintenance account. For example, the budget proposal includes a provision, which the Congress adopted in the fiscal year 2005 Energy and Water Development Appropriations Act, indicating that among the purposes for which funding is provided is "for the benefit of federally listed species to address the effects of civil works projects owned or operated by the Corps". The budget language also provides that funding for "eligible operations and maintenance" is to be derived from the Harbor Maintenance Trust Fund. Consistent with section 201 of the Water Resources Development Act of 1996, eligible operations and maintenance activities include not only harbor dredging but also the dredged material disposal facilities and navigation mitigation discussed above.

Watershed and System Budgeting for Operation and Maintenance

Although the concept of watershed and system budgeting and program execution for operation and maintenance (O&M) was adopted too late in the budget cycle to be fully implemented in formulating the fiscal year 2007 budget, the O&M budget is presented on a watershed/system basis and, if Congress concurs on the benefit of planning and carrying out the O&M program in accordance with system-wide priorities, then during fiscal year 2007 the O&M program would be managed by watershed and business program, rather than primarily project-by-project.

Proposed fiscal year 2007 funding is consolidated according to Civil Works program areas, such as commercial navigation and flood and storm damage reduction, for each of the 21 major river basins in the United States, as established by the U.S. Geological Survey. The specific projects that would receive funding in each basin also are identified by name. For future fiscal years, the budget not only will be presented by basin or system, but also will be developed in the first place based on basins and systems. Should operation and maintenance work be funded in the manner presented, managers in the field would be better able to adapt to uncertainties and changed conditions throughout the fiscal year, consistent with budget and appropriations decisions.

Repayment of the Judgment Fund

We are proposing that funds that (1) were appropriated in fiscal year 2006 or a prior year, (2) are not needed for the purpose for which they were appropriated, and (3) are carried over unobligated to fiscal year 2007 be reprogrammed to begin to repay the Department of the Treasury's Judgment Fund. The repayments would be for judgments against the United States that were paid by the Fund on Civil Works projects. Currently over $150 million is owed to the Judgment Fund for Civil Works projects.

Expenses Account

The Expenses account funds the management and executive direction expenses of the Army Corps of Engineers, both at its Headquarters and Major Subordinate Divisions, as well as support organizations such as the Humphreys Engineer Center Support Activity, the Institute for Water Resources, and the Finance Center. In addition, the fiscal year 2007 budget proposes that, beginning in fiscal year 2007, the Office of the Assistant Secretary of the Army for Civil Works—including some indirect and overhead costs not previously allocated to this office—be funded in an expanded Expenses account, rather than in its own separate account or as part of the account funding the other Army Secretariat offices.

Reprogramming and Contracting

The budget proposes reauthorization of sections 101, 106, and 108 of the Energy and Water Development Appropriations Act, 2006, with certain changes. These sections established rules in law for fiscal year 2006 on reprogramming and continuing contracts. I would like to emphasize the programmatic need for one of these changes, namely, that we would no longer require each partially funded contract for operation and maintenance to be a continuing contract, so that the Corps would have the flexibility to use other contracting tools in the O&M program, such as base-plus-options contracts.

STUDIES AND DESIGN

The fiscal year 2007 budget concentrates funding on the 55 most promising studies and preconstruction engineering and design (PED) activities. For the navigation and flood and storm damage reduction studies, performance was assessed based primarily on likely economic benefits and costs. For PED activities for such projects, the estimated ratio of remaining benefits to remaining costs is known, and PED activities were funded for projects with ratios of 4.0 to 1 or greater at a 7 percent discount rate. For aquatic ecosystem restoration studies and PED activities, performance was assessed based on the likelihood of projects that would meet the criteria in the construction guidelines.

The budget provides $94 million for the Investigations account and $1 million for investigations within the Mississippi River and Tributaries account. Among the $95 million total, $25 million is for the Louisiana Coastal Area study of coastal wetlands restoration; $20 million is for a national inventory of flood and storm damage reduction projects; $13 million is for other project-specific studies including a new study needed to support continued land acquisition to further reduce the risk of flood damage in the Atchafalaya Basin; $4 million is for project-specific PED; $15 million is for research and development; and $18 million is for other coordination, data collection, and study activities.

One of my priorities is to improve analytical tools to support water resource planning and decision-making. The budget supports this with robust funding for the Navigation Economic Technologies research program and for the development of benefit evaluation methods for aquatic ecosystem restoration.

CONSTRUCTION

In recent years, many more construction projects have been authorized, initiated, and continued than can be constructed efficiently at any one time. This has led to the postponement of benefits from the most worthy projects, which has significantly reduced overall program performance. To remedy this situation and to achieve greater value to the Nation from the Civil Works construction program, the budget focuses significant funding on the projects that yield the greatest return to the Nation, based upon objective performance criteria.

The budget again proposes performance guidelines to allocate funds among construction projects, including significant refinements to the performance guidelines proposed in 2006. The most significant of these changes is the addition of a non-economic performance criterion covering flood and storm damage reduction projects that address a significant risk to human safety.

Under the guidelines, the budget allocates funds among construction projects based primarily on the remaining economic benefits of projects relative to their remaining costs, their contributions to reducing life-threatening inundation hazards, and the extent to which they cost-effectively contribute to the restoration of nationally or regionally significant aquatic ecosystems where the ecosystems have become degraded as a result of Civil Works projects or to a restoration effort for which the Corps is otherwise uniquely well suited. The 2007 performance guidelines are at Enclosure 3.

The funded construction projects include 6 considered to be national priorities; 14 projects in their final year of construction (including 1 dam safety project); 10 other dam safety, seepage, and static instability correction projects; 1 high priority newly funded project (Washington, DC and vicinity, which will reduce the risk of flood damage to the museums on the National Mall, the Franklin Delano Roosevelt Memorial, and the World War II Memorial and eliminate the temporary closures at 23rd Street and Constitution Avenue, NW, and 2nd and P Streets, SW in downtown Washington, DC); and 60 other ongoing projects. Ninety-one projects are funded altogether.

After adjusting for the work reassigned to the Operation and Maintenance account, the budget provides an increase in construction funding of about $280 million compared to the fiscal year 2006 budget. This robust funding level enables work on most of the 91 projects, as well as on the ongoing projects reassigned from the construction program to the operation and maintenance program, to proceed at between 80 percent and 100 percent of the maximum rate that the Corps can efficiently spend funds in fiscal year 2007.

For low priority projects that are scheduled to have a construction contract underway at the beginning of fiscal year 2007, the budget provides funding either to complete each ongoing contract, or to terminate it and pay the Federal share of settled claims, whichever is estimated to be less costly. The budget includes $50 million for this purpose, $42 million in the Construction account and $8 million in the Mississippi River and Tributaries account.

CIVIL WORKS PROGRAM AREAS

The Army Civil Works program includes eight program areas, plus oversight/executive direction and management. The eight program areas are commercial navigation, flood and coastal storm damage reduction, aquatic ecosystem restoration, recreation, hydropower, water supply, emergency management, and the regulatory program. Budget proposals for the eight program areas are discussed below.

Emergency Management and Flood and Coastal Storm Damage Reduction

The budget for Emergency Management and Flood and Coastal Storm Damage Reduction reflects a sharpened focus on flood and hurricane preparedness and damage reduction.

The budget provides $20 million in the Investigations account for a national inventory and database of flood and storm damage reduction projects, and for developing and testing methods to assess the structural and operational integrity and the associated risks of such projects. This effort will dovetail with the Corps' ongoing risk assessment for its portfolio of dams.

The budget provides $81 million in the Flood Control and Coastal Emergencies account for planning, preparedness, and response to flood and storm emergencies,

and for rehabilitation of damaged flood and storm damage reduction projects. This is an increase of $11 million over the fiscal year 2006 budget. Our experience during the 2005 hurricane season underscores the need for securing funds in advance for such purposes, and we urge the Congress to include this funding in the annual Energy and Water Development Appropriations Act.

The budget continues to support Federal participation in the initial phase of authorized beach nourishment projects for storm damage reduction and ecosystem restoration purposes. The budget continues the policy of funding Federal involvement in long-term, follow-on periodic renourishment only to the extent that the operation and maintenance of Federal navigation projects is the reason for the sand loss on shorelines.

Commercial Navigation

The amount budgeted for the construction and rehabilitation of inland waterway projects, $394 million, is the highest amount ever included in a Civil Works budget. This funding will help ensure the continued efficiency and reliability of our principal inland waterways. Work will begin on rehabilitation of Lock and Dam 27, Illinois and Missouri, and Markland Lock and Dam, Indiana and Kentucky. The budget focuses operation and maintenance funding for the inland waterways on those segments that support high volumes of commercial traffic, including the Mississippi, Ohio, and Illinois waterways.

The budget gives priority to the operation and maintenance of harbors with high volumes of commercial traffic. The budget also funds harbors that support significant commercial fishing, subsistence, public transportation, harbor of refuge, national security, or safety benefits.

As discussed earlier, the budget provides funding under the operation and maintenance program for authorized beach renourishment work to the extent needed to replace sand lost due to Federal navigation operation and maintenance. This work is now part of the commercial navigation program area.

Aquatic Ecosystem Restoration

The budget includes $164 million for the Corps contribution to the Everglades restoration effort. Of this amount, $35 million is for the Corps to continue to participate financially in the Modified Water Deliveries project, along with the National Park Service. Within this amount, the budget also includes funds to initiate additional work on the Kissimmee River, continue the pilot aquifer storage and recovery projects program, continue other planning and design work on the Comprehensive Everglades Restoration Plan, and examine flows in the vicinity of Lake Okeechobee.

The budget provides $27 million for the Upper Mississippi Restoration Program, including $3 million for a study needed to establish priorities for the next 10 years for this nationally significant effort. To address the continuing loss of wetlands along the Louisiana coast, the budget provides $20 million to continue planning and design for the Louisiana Coastal Area aquatic ecosystem restoration program and $5 million for the science program supporting this effort.

As discussed above, the budget proposes that measures at operating projects to comply with Biological Opinions pursuant to the Endangered Species Act be funded from the Operation and Maintenance account and allocated among project purposes.

Regulatory Program

The President's budget provides $173 million to the Corps Regulatory Program to protect wetlands and other waters of the United States. This represents a $15 million increase compared to fiscal year 2006 appropriations, which would result in a total increase of 20 percent in funding over the last 3 years. One of my priorities for the Civil Works program is to improve the effectiveness of aquatic resource protection and the efficiency of permit reviews and decision-making. The added funds will be used to improve permit processing times, increase aquatic resource protection, and advance watershed-based approaches.

Investing in the Regulatory Program is a win-win proposition. The added funds will enable most public and private development to proceed with minimal delays, while ensuring that the environment is protected consistent with the Nation's water quality laws.

Recreation

The fiscal year 2007 budget proposes a recreation modernization initiative for Civil Works recreation facilities, based on a promising model now used by other major Federal recreation providers such as the National Park Service and the Forest Service. The administration has proposed legislation for the Corps to use additional fees and other revenues to upgrade and modernize recreation facilities at the sites where this money is collected.

Specifically, the legislation includes authority for the Corps to charge entrance fees and other types of user fees where appropriate, and to cooperate with non-Federal park authorities and districts. The Corps would use collections above a $37 million per year baseline to provide facility modernizations and upgrades.

Hydropower

The budget provides funding for hydropower operation and maintenance costs, as well as funding for ongoing replacements at three hydropower projects. Unlike the budgets of recent years, the budget does not propose that Federal power marketing administrations directly fund the costs of hydropower operation and maintenance.

Environmental Stewardship

Corps of Engineers-administered lands and waters cover 11 million acres. That is equal in size to the area of the States of Vermont and New Hampshire. The budget proposes a total of $89 million for environmental stewardship for these resources. Funded activities include shoreline management, protection of natural resources, continuation of mitigation activities, and protection of cultural and historic resources.

Oversight and Executive Direction and Management

The fiscal year 2007 budget provides $164 million for the Expenses account. This account funds executive direction and management activities of the Corps headquarters, the Corps division offices, and related support organizations that pertain to Civil Works.

In addition, $6 million of the funding for the Expenses account is for the Office of the Assistant Secretary of the Army (Civil Works). This amount is needed to cover not only the Assistant Secretariat share of costs that are usually allocated among offices in the Headquarters, Department of Army, but also the appropriate share of centrally managed and ordinarily non-allocated costs. The inclusion of funding for these purposes is in accordance with the direction in the fiscal year 2006 Conference Report.

The Budget proposes to finance audits through the Revolving Fund. The costs would be allocated among and then charged back to the benefiting accounts as a normal cost of doing business.

PRESIDENT'S MANAGEMENT AGENDA

The Army Civil Works program is pursuing five government-wide management initiatives, as are other Federal agencies. These are competitive sourcing, strategic management of human capital, financial management, e-government, and budget-performance integration. The Army Civil Works program also is participating in the initiative for real property asset management.

The Office of Management and Budget scores the status of each agency in implementing each initiative. Like most agencies, the Army Civil Works program started out with "red" stoplight scores across the board. On four initiatives—all but competitive sourcing and human capital—Civil Works status is still red. We are working to improve our progress and status and welcome your support of our efforts.

CONCLUSION

At $4.733 billion, the fiscal year 2007 Army Civil Works budget is the highest Civil Works budget in history.

The budget reflects progress in performance-based budgeting, as called for in the President's management agenda. In developing this budget, we made explicit choices based on performance. The emphasis on the completion of high-performing construction projects, preparedness for and mitigation of flood and hurricane hazards, and improved execution of the Regulatory Program, for example, reflect a performance-based approach.

The Army Civil Works budget for fiscal year 2007 will enable the Civil Works program to move ahead with more resources to pursue investments that will yield good returns for the Nation in the future. The budget represents the wise use of funding to advance worthy, mission-based objectives. I am proud to present it.

Thank you, Mr. Chairman and members of the subcommittee, for this opportunity to testify on the President's fiscal year 2007 budget for the Civil Works program of the Army Corps of Engineers.

ENCLOSURE 1.—DEPARTMENT OF THE ARMY CORPS OF ENGINEERS—CIVIL WORKS BUDGET SUMMARY, FISCAL YEAR 2007

	Amount
Requested New Appropriations by Account:	
Investigations	$94,000,000
Construction	1,555,000,000
Operation and Maintenance	2,258,000,000
Regulatory Program	173,000,000
Flood Control, Mississippi River and Tributaries	278,000,000
Expenses	164,000,000
Flood Control and Coastal Emergencies	81,000,000
Formerly Utilized Sites Remedial Action Program	130,000,000
TOTAL	4,733,000,000
Requested New Appropriations by Program Area:	
Commercial Navigation	1,926,000,000
Flood and Coastal Storm Damage Reduction	1,291,000,000
Environment	539,000,000
(Aquatic Ecosystem Restoration)	(320,000,000)
(FUSRAP)	(130,000,000)
(Natural Resources)	(89,000,000)
Hydropower	285,000,000
Recreation	267,000,000
Water Supply	2,000,000
Emergency Management	86,000,000
(Flood Control and Coastal Emergencies)	(81,000,000)
(National Emergency Preparedness)	(5,000,000)
Regulatory Program	173,000,000
Executive Direction and Management	164,000,000
TOTAL	4,733,000,000
Sources of New Appropriations:	
General Fund	3,791,000,000
Harbor Maintenance Trust Fund	707,000,000
Inland Waterways Trust Fund	197,000,000
Special Recreation User Fees	37,000,000
Disposal Facilities User Fees	1,000,000
TOTAL	4,733,000,000
Additional New Resources:	
Rivers and Harbors Contributed Funds	445,000,000
Coastal Wetlands Restoration Trust Fund	75,000,000
Permanent Appropriations	18,000,000
TOTAL	538,000,000
Total New Program Funding	5,271,000,000

ENCLOSURE 2.—DEPARTMENT OF THE ARMY—CORPS OF ENGINEERS—CIVIL WORKS BUDGET, FISCAL YEAR 2007—CROSSCUT BETWEEN APPROPRIATION ACCOUNTS AND PROGRAM AREAS

	Navigation	Flood/Storm	Recreation	Aq. Eco. Rest	Env. Stewrd.	FUS-RAP	Hydro-Power	Water Supply	Emerg. Mgmt.	Reg. Prog.	ED&M	TOT
Investigations	23	34	.....	37	.....	.....	.....	.....	.....	.....	.....	94
Construction	596	653	.....	278	.....	.....	28	.....	.....	.....	.....	1,555
Operation/Maint.	1,270	387	253	.....	84	.....	257	2	5	.....	.....	2,258
MR&T—I	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
MR&T—C	14	111	.....	5	.....	.....	.....	.....	.....	.....	.....	130
MR&T—M	23	105	14	.....	5	.....	.....	.....	.....	.....	.....	147
FUSRAP	.....	.....	.....	.....	.....	130	.....	.....	.....	.....	.....	130
FC&CE	.....	.....	.....	.....	.....	.....	.....	.....	81	.....	.....	81
Regulatory	.....	.....	.....	.....	.....	.....	.....	.....	.....	173	.....	173
Expenses	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	164	164
TOTAL	1,926	1,291	267	320	89	130	285	2	86	173	164	4,733

ENCLOSURE 3.—DEPARTMENT OF THE ARMY—CORPS OF ENGINEERS—CIVIL WORKS BUDGET, FISCAL YEAR 2007—PERFORMANCE BUDGETING GUIDELINES FOR CIVIL WORKS CONSTRUCTION

The budget for the construction account allocates funds based on the following seven performance-based guidelines, which improve the overall performance of the construction program by redirecting funds to high-performing projects and limiting new construction starts.

1. Project rankings within mission areas.—All ongoing, specifically authorized construction projects, including projects funded in the Mississippi River and Tributaries account, will be assigned based upon their primary purpose to one of the main mission areas of the Corps (flood and storm damage reduction; commercial navigation; aquatic ecosystem restorations) or to hydropower. Projects, except for aquatic ecosystem restoration projects, will be ranked by their remaining benefits divided by their remaining costs (RBRC), calculated at a 7 percent real discount rate. Aquatic ecosystem restoration projects will be ranked by the extent to which they cost effectively contribute to the restoration of a nationally or regionally significant aquatic ecosystem that has become degraded as a result of a Civil Works project, or to a restoration effort for which the Corps is otherwise uniquely well-suited (e.g., because the solution requires complex alternations to the hydrology and hydraulics of a river system).

2. Project completions.—Each project with an RBRC of 3.0 or greater that can be completed in the budget year with a final increment of funding will receive the balance of funding needed to complete construction and related administrative activities. Likewise, each aquatic ecosystem restoration project that cost-effectively contributes to the restoration of a nationally or regionally significant aquatic ecosystem that has become degraded as a result of a civil works project, or to a restoration effort for which the Corps is otherwise uniquely well-suited, and that can be completed in the budget year with a final increment of funding will receive the balance of funding needed to complete construction and related administrative activities.

3. Projects with very high economic and environmental returns.—The projects with the highest RBRCs (or that are the most cost-effective in contributing to the restoration of a nationally or regionally significant aquatic ecosystem that has become degraded as a result of a Corps project, for aquatic ecosystem restoration) will receive not less than 80 percent of the maximum level of funding that the Corps can spend efficiently in each fiscal year.

4. Projects with a low priority.—All ongoing flood and storm damage reduction, commercial navigation, and hydropower constructions projects that have RBRCs below 3.0, except for flood and storm damage reduction projects that are funded in the budget to address significant risk to human safety, will be considered for deferral. All ongoing aquatic ecosystem restoration projects that do not cost-effectively contribute to the restoration of a nationally or regionally significant aquatic ecosystem restoration that has become degraded as a result of a Civil Works project, and do not cost-effectively address a problem for which the Corps is otherwise uniquely well-suited, and are less than 50 percent complete will be considered for deferral. Where a project considered for deferral was previously budgeted, the budget will include funding to cover the cost of terminating or completing each ongoing contract, whichever is less. Budget year and future year savings from project suspensions (after covering the cost of terminating or completing ongoing contracts) will be used to accelerate the projects with the highest net economic and environmental returns.

5. New starts and resumptions.—The budget will provide funds to start up new construction projects, and to resume work on ongoing construction projects on which the Corps has not performed any physical work under a construction contract during the past 3 consecutive fiscal years, only if the project would be ranked in the top 20 percent of the ongoing construction projects in its mission area that year.

The term "physical work under a construction contract" does not include activities related to project planning, engineering and design, relocation, or the acquisition of lands, easements, or rights-of-way. For non-structural flood damage reduction projects, construction begins in the first fiscal year in which the Corps acquires lands, easements, or rights-of-way primarily to relocate structures, or performs physical work under a construction contract for non-structural project-related measures. For aquatic ecosystem restoration projects, construction begins in the first fiscal year in which the Corps acquires lands, easements, or rights-of-way primarily to facilitate the restoration of degraded aquatic ecosystems including wetlands, riparian areas, and adjacent floodplains, or performs physical work under a constructions contract to modify existing project facilities primarily to restore the aquatic

ecosystem. For all other water resources projects, construction begins in the first fiscal year in which the Corps performs physical work under a construction contract.

6. Other cases.—All other ongoing construction projects will receive not more than the amount needed to meet earnings permitted under ongoing multi-year contracts and related costs, except for flood and storm damage reduction projects that are funded in the budget to address significant risk to human safety, which will receive at least the funding needed to pay contractor earnings and related costs.

Dam safety assurance, seepage control, and static instability correction projects that are funded in the budget for construction will receive the maximum level of funding that the Corps can spend efficiently in each fiscal year.

Projects that are funded in the budget for construction will receive the amount needed to ensure that they comply with treaties and with biological opinions pursuant to the Endangered Species Act, and meet authorized mitigation requirements.

7. Ten percent rule.—Up to a total of 10 percent of the funding available for construction may be allocated to ongoing construction projects regardless of the guidelines above. However, this may not be used to start up or resume any project.

The budget proposes that the administration and the Congress apply these guidelines to the Corps construction account and to the construction activities in the Mississippi River and Tributaries account.

Senator DOMENICI. Thank you very much.

General.

STATEMENT OF LIEUTENANT GENERAL CARL A. STROCK, CHIEF OF ENGINEERS

General STROCK. Mr. Chairman and members of the committee: I am honored to be testifying before you today with the Honorable John Paul Woodley on the President's fiscal year 2007 budget for the Army civil works program. If I may, I would like to briefly summarize the key points of my testimony and include my complete statement for the record.

Senator DOMENICI. Please do and that will be done.

General STROCK. Good, sir.

This budget is a performance-based budget that reflects the realities of the national budget, supporting the Nation's recent natural disasters and the global war on terror. This budget focuses construction on funding of 63 projects that will provide the highest returns on the Nation's investment, including 11 dam safety projects. Funds will be used for critical water resources infrastructure that improves the quality of our citizens' lives and provides a foundation for national economic growth and development.

The budget incorporates performance-based metrics for continued efficient operation of the Nation's waterborne navigation, flood control, and other water resource management infrastructure, fair regulation of wetlands, and restoration of important environmental resources.

There are six national priority construction projects funded in the construction program. They are: the New York-New Jersey Harbor Deepening Project; the Oakland River—the Oakland Harbor Deepening Project; construction of Olmstead Locks and Dam in Illinois and Kentucky; the Florida Everglades and South Florida Ecosystem; the Side Channels of the Upper Mississippi River System; and Sims Bayou in Houston, Texas; and two others, the Missouri River Restoration and the Columbia River Restoration, both funded in the operations and maintenance account.

This budget also provides the quality of recreation services through stronger partnerships and modernization. The budget provides approximately $65.3 million to complete 14 projects, including one dam safety project, in 2007. As part of a comprehensive

strategy to reduce the construction backlog, the fiscal year 2007 budget funds projects that provide the highest returns and are consistent with current policies. In all, 91 projects are funded so that we can provide benefits to the Nation sooner.

The fiscal year 2007 budget includes $2.258 billion for the operations and maintenance program and I can assure you that I will continue to do all that I can to make these programs as cost effective and efficient as possible.

Domestically, more than 8,000 volunteers from around the Nation have deployed to help citizens and communities on the gulf coast in the aftermath of Hurricanes Katrina, Rita, and Wilma. Even now, more than 6 months after Hurricane Katrina, 2,000 USACE volunteers continue to execute our FEMA-assigned disaster recovery missions along the gulf coast and to accomplish the critical restoration work of the New Orleans Area Levee System.

Internationally, the U.S. Army Corps of Engineers remains committed to the monumental task of helping to rebuild the infrastructure and economies of Iraq and Afghanistan, and more than 1,700 USACE volunteers have deployed to Iraq since 2003. They continue to make progress toward this Nation's goals of restoring the security and quality of life for all Iraqis and Afghans as they pursue democracy and freedom.

The Corps' Gulf Regional Division has overseen the initiation of 3,000 reconstruction projects and the completion of more than 2,100. These projects make a difference in the everyday lives of the Iraqi people and are visible signs of progress.

The water resources management infrastructure has improved the quality of our citizens' lives in support of the economic growth and development of this country. Our systems of navigation, flood, and storm damage reduction projects and efforts to restore aquatic ecosystems contribute to our national welfare.

PREPARED STATEMENT

In closing, the Corps is committed to selflessly serving the Nation and I truly appreciate your continued support in this end. Thank you, Mr. Chairman and members of the committee. This concludes my statement.

[The statement follows:]

PREPARED STATEMENT OF LIEUTENANT GENERAL CARL A. STROCK

Mr. Chairman and distinguished members of the subcommittee, I am honored to be testifying before your subcommittee today, along with the Assistant Secretary of the Army (Civil Works), the Honorable John Paul Woodley, Jr., on the President's fiscal year 2007 budget for the United States Army Corps of Engineers' Civil Works Program.

My statement covers the following 3 topics:

—Summary of fiscal year 2007 Program Budget,
—Civil Works Backlog,
—Value of the Civil Works Program to the Nation's Economy, and to the Nation's Defense.

SUMMARY OF FISCAL YEAR 2007 PROGRAM BUDGET

Introduction

The fiscal year 2007 Civil Works Budget is a performance-based budget, which reflects a focus on the projects and activities that provide the highest net economic and environmental returns on the Nation's investment or address significant risk to human safety. The Civil Works Program, including the Direct and Reimbursed

programs, is expected to involve total spending (Federal plus non-Federal) of $7.3 billion to $8.3 billion. The exact amount will depend on assignments received from the Federal Emergency Management Agency (FEMA) for hurricane disaster relief and from the Department of Homeland Security for border protection facilities.

Direct Program funding totals $5.271 billion, consisting of discretionary funding of $4.733 billion and mandatory funding of $538 million. The Reimbursed Program funding is projected to involve an additional $2 billion to $3 billion.

Direct Program

The budget reflects the administration's commitment to continued sound development and management of the Nation's water and related land resources. It incorporates performance-based metrics for the construction program, funds the continued operation of commercial navigation and other water resource infrastructure, provides a needed increase in funding for the regulation of the impacts of development on the Nation's wetlands, and supports restoration of nationally and regionally significant aquatic ecosystems, with emphasis on the Florida Everglades, the Upper Mississippi River, and the coastal wetlands of Louisiana. It also improves the quality of recreation services through stronger partnerships and modernization.

The budget emphasizes the construction and completion of water resources projects that will provide a high return on the Nation's investment in the Corps' primary mission areas. There are 91 projects, including 6 national priority projects; 14 projects in their final year of completion (including 1 dam safety project); 10 other dam safety assurance, seepage control, and static instability correction projects; 1 high priority newly funded project (Washington, DC and vicinity, which will reduce the risk of flood damage to the museums on the National Mall, the Franklin Delano Roosevelt Memorial, and the World War II Memorial and eliminate the temporary closures at 23rd Street and Constitution Avenue, NW, and 2nd and P Streets, SW in downtown Washington, DC); and 60 other ongoing projects. The focus of this budget is on providing the highest net economic and environmental returns on the Nation's investment and addressing significant risk to human safety.

Reimbursed Program

Through the Interagency and Intergovernmental Services Program we help non-DOD Federal agencies, State, local, and tribal governments, and other countries with timely, cost-effective implementation of their programs, while maintaining and enhancing capabilities for execution of our Civil and Military Program missions. These customers rely on our extensive capabilities, experience, and successful track record. The work is principally technical oversight and management of engineering, environmental, and construction contracts performed by private sector firms, and is fully funded by the customers.

Currently, we provide reimbursable support for about 60 other Federal agencies and several State and local governments. Total reimbursement for such work in fiscal year 2007 is projected to be $2.0 billion to $3.0 billion. The exact amount will depend on assignments received from the Federal Emergency Management Agency (FEMA) for hurricane disaster relief and from the Department of Homeland Security for border protection facilities.

CIVIL WORKS BACKLOG

The budget addresses the construction backlog primarily by proposing that the administration and the Congress use objective performance measures to establish priorities among projects including potential new starts, and through a change in Corps contracting practices to increase control over future costs. The measures proposed include the ratio of remaining benefits to remaining costs for projects with economic outputs; the extent to which the project cost-effectively contributes to the restoration of a nationally or regionally significant aquatic ecosystem that has become degraded as a result of a Civil Works project or to an aquatic ecosystem restoration effort for which the Corps is otherwise uniquely well-suited; and giving priority to dam safety assurance, seepage control, static instability correction, and projects that address significant risk to human safety. With the exception of up to 10 percent of the available funds that could be allocated to any project under construction regardless of performance, resources are allocated based on Corps estimates to achieve the highest net economic and environmental returns and to address significant risk to human safety. Over time, this approach would significantly improve the benefits to the Nation from the Civil Works construction program.

We believe that narrowing the focus of our effort to fund and complete a smaller, more beneficial set of projects will improve overall program performance and bring higher net benefits per dollar to the Nation sooner. That is why the budget proposes

only one new, high priority construction start and accelerates completion of the highest-return projects.

Maintenance Program

The facilities owned and operated by, or on behalf of, the Civil Works Program are aging. As stewards of this infrastructure, we are working to ensure that it continues to provide an appropriate level of service to the Nation. Sustaining such service poses a technical challenge in some cases, and proper operation and maintenance also is becoming more expensive as this infrastructure ages.

The operation and maintenance program supports the operation, maintenance and security of existing commercial navigation, flood and storm damage reduction, and aquatic ecosystem restoration works owned and operated by, or on behalf of, the Corps of Engineers, including administrative buildings and laboratories. Funds are also included for national priority efforts in the Columbia River Basin and Missouri River Basin to support the continued operation of Corps of Engineers multi-purpose projects by meeting the requirements of the Endangered Species Act. Other work to be accomplished includes dredging, repair, and operation of structures and other facilities, as authorized in the various River and Harbor, Flood Control, and Water Resources Development Acts. Related activities include aquatic plant control, monitoring of completed coastal projects, and removal of sunken vessels.

The Operation and Maintenance program for the fiscal year 2007 budget consists of $2.258 billion in the operation and maintenance account and $147 million under the Mississippi River and Tributaries program. To improve accountability and oversight, reflect the full cost of operating and maintaining existing projects, and support an integrated investment strategy, the fiscal year 2007 Civil Works budget transfers several activities to the O&M program from the construction program. This budget also organized operation and maintenance activities by river basin and by mission area to set the stage for improved management of Civil Works assets and more systematic budget development in future years. Furthermore, we are searching for ways to reduce costs and thereby accomplish more with available resources.

The fiscal year 2007 budget also supports performance-based budgeting for the operation and maintenance program by funding ongoing efforts to develop better risk-based facility condition indices and asset management systems. These analytical tools will improve our ability in the future to develop long-term asset management strategies and establish priorities for the operation, maintenance and management of Civil Works assets. Our goal is to begin using these improved analytical tools within 2 years.

VALUE OF THE CIVIL WORKS PROGRAM TO THE NATION'S ECONOMY AND DEFENSE

We are privileged to be part of an organization that directly supports the President's priorities of winning the global war on terror, securing the homeland and contributing to the economy.

The National Welfare

The way in which we manage our water resources can improve the quality of our citizens' lives. It has affected where and how people live and influenced the development of this country. The country today seeks economic development as well as the protection of environmental values.

Domestically, more than 8,000 USACE volunteers from around the Nation have deployed to help citizens and communities along the Gulf Coast in the aftermath of Hurricanes Katrina, Rita, and Wilma. Even now, more than 6 months after Hurricane Katrina, 2,000 USACE volunteers continue to execute our FEMA-assigned disaster recovery missions along the Gulf Coast, and to work on rebuilding the New Orleans-area levee system.

As to Hurricane recovery—the Corps of Engineers is repairing significant damages to reaches of federally constructed levees, floodwalls and other features, repairing damaged pumping stations that were constructed or modified as a part of the Southeast Louisiana Urban Flood Control project, and repairing non-Federal levees and pump stations. Along the three outfall canals, we are installing interim closure structures and temporary pumps until a more permanent solution can be implemented. We have also initiated analyses that will explore options to improve protection along the Louisiana and Mississippi Coasts.

Mr. Chairman, we continue to work with you, this subcommittee, and other members of Congress on the authorization and funding proposed by the administration for modifications that will strengthen the existing hurricane protection system for New Orleans.

Research and Development

Civil Works Program research and development provides the Nation with innovative engineering products, some of which can have applications in both civil and military infrastructure spheres. By creating products that improve the efficiency and competitiveness of the Nation's engineering and construction industry and providing more cost-effective ways to operate and maintain infrastructure, Civil Works Program research and development contributes to the national economy.

The National Defense

Internationally, the U.S. Army Corps of Engineers remains committed to the monumental task of helping to rebuild the infrastructures and economies of Iraq and Afghanistan. Corps' Civilians and Soldiers continue to make progress toward this Nation's goals of restoring the security and quality of life for all Iraqis and Afghanis as they pursue democracy and freedom.

More than 1,700 USACE volunteers have deployed to Iraq since 2003. The Corps' Gulf Region Division has overseen the initiation of nearly 3,000 reconstruction projects and the completion of more than 2,100. These projects make a difference in the every day lives of the Iraqi people, and are visible signs of progress.

In Afghanistan, the Corps is spearheading construction projects for the Afghan national army and national police, supporting USAID, and executing important public infrastructure and humanitarian projects.

CONCLUSION

The Corps of Engineers is committed to staying at the leading edge in service to the Nation. In support of that, we are working with others to transform our Civil Works Program. We're committed to change that leads to open, transparent modernization, and a performance-based Civil Works Program.

Thank you, Mr. Chairman and members of the committee. This concludes my statement.

Senator DOMENICI. Thank you very much.

Now, I want to make a little announcement which I think we all know up here, but let us make sure you know out there. The Majority Leader has indicated to us Republicans that at 3:15 he would like all Republicans present on the floor of the Senate. He is going to address the issue that is before the Senate. And we will try to be there. That is not mandatory for you all.

Senator DORGAN. Is it advisable?

Senator DOMENICI. It is whatever you will do.

What I would suggest, if you have no desire to go down and be part of that, I am willing to say you proceed if you be careful and do things right, and I am sure you will.

Now, we are going to—with your permission, I think we are going to use the time between now and 3:15 without yielding to you all and then give it to you. Everything will turn off. When we give it over to you, it will turn off 15 minutes after you take over. It will turn off, everything. So you will have 15 minutes also. I am kidding you.

The two Senators on this side, you want to split a little time and leave me a little at the end?

Senator ALLARD. I do not think I will take too long. I just have two or three important questions.

Senator DOMENICI. Proceed, Senator.

Senator ALLARD. I want to get back to this Fountain Creek Watershed Study in Colorado. How much has been expended by the Federal Government to conduct that study to date?

General STROCK. Sir, we have spent $65,000 through fiscal year 2003.

Senator ALLARD. Not anywhere near a match of 50 percent of what local governments have spent, is that correct?

General STROCK. Yes, sir.

Senator ALLARD. Please share with me how you set priorities for the budget and why the funding for the Fountain Creek Study wasn't included this time around?

Mr. WOODLEY. Senator, in general the priorities within the general investigations account were set in accordance with the same priorities that are used with respect to the construction account, on the concept that the one would lead into the other. But this year our general investigations allocation was very severely constrained because it was largely devoted to two very large efforts that we are undertaking, one with respect to the Louisiana Coastal Area Restoration Study and the other is in a $20 million request for a nationwide study and inventory of flood control structures, and in particular levees. So that put enormous constraints and very, very many very worthy studies were not able to be included in this year's budget request.

Senator ALLARD. Is that the same problem we are running into with the tamarisk removals? There are tamarisk removal projects I think all over the West. It is a water-drinking tree.

Mr. WOODLEY. Yes, sir, I am very familiar with salt cedar.

Senator ALLARD. And you do not have any plans to conduct any more of those removal projects in the West?

Mr. WOODLEY. I would have to get back to you on that. I will tell you that I would advocate for that. That is a very important—and indeed, the chairman and I have visited the Bosque in his home State, in which a great part of our effort that is ongoing along that watershed at Albuquerque is to remove the tamarisk salt cedar. It is something we are finding all over our properties and I think I would advocate for a concerted national effort to rid our areas of that.

Senator ALLARD. I think that is going along the Rio Grande in New Mexico. We have got the Rio Grande in Colorado and we also have the Arkansas and Colorado Rivers. So I am particularly interested in your responding as far as the Colorado projects in the West. I would like to get that information when you get a chance.

Mr. WOODLEY. Absolutely, yes, sir. I will get back to you on that.

Senator ALLARD. Very good.

Then I will stop right there, Mr. Chairman, so you and the other members can——

General STROCK. Senator, if I could quickly amend my answer to you. The $65,000 I cited was through 2003, but since that time, in 2004 and 2005, we have had a total of $937,000 against the project.

Senator ALLARD. Nine hundred thirty-seven thousand dollars?

General STROCK. And in 2006 $125,000, for a total of $1,032,000, which is matched by the State, and that is where we are now.

Senator ALLARD. Yes, okay. I appreciate that. Thank you.

Senator DOMENICI. General, I am going to talk about Katrina a little bit. I am sure that the distinguished Senator from Louisiana is going to follow up on a lot of this, but I want to go through as much as I can, and what I do not get through I am going to submit to you to answer.

First of all, General, can you give us a quick status update on the current rebuilding efforts?

General STROCK. Yes, sir. Currently our main target is by June 1 of this year to have the entire system restored and repaired to where it was when Katrina hit, and we are on target to do that, sir.

Senator DOMENICI. I have been told that the United States Geological Survey says that the storm surge from Hurricane Katrina is the greatest recorded storm surge to ever hit the United States. Can you confirm this was in fact a large hurricane that struck, contrary to what may have been said? And is that, is what I have just said, true?

General STROCK. Sir, I cannot personally confirm that. I have heard that cited, but I have not heard that directly from the USGS. But I do understand that is the case. I know that it was such a large system and storm surge, that it destroyed most of the gauges that would tell us what actually occurred.

Senator DOMENICI. So do you think the USGS can confirm this or do you think they cannot, what I have just said?

General STROCK. I am sure they can, yes, sir. I have absolute confidence in the USGS, yes, sir.

Senator DOMENICI. If we want that we should get it from them?

General STROCK. Yes, sir.

Senator DOMENICI. Along with everyone else, I have read articles from various experts about the levee failures in New Orleans. Most of those experts have indicated that the Corps was aware of potential problems with the levees as designed and constructed. Further, there has been considerable comment that the levees should have withstood the effects of Katrina.

General, I need to know from you, what is the Corps' response? Is there any fire to go with all this smoke or is this speculation from self-described experts without access to real concrete data?

General STROCK. Sir, that is a tough one to answer. I think that if you look at the history of these projects, the Lake Pontchartrain study, which is the one, the project which actually failed during the event, was authorized in 1965, so there have been literally generations of people involved in this. To say that at some point in this there may have been some concerns expressed about adequacy of designs and so forth, I really do not know.

I can tell you that as an institution we were not aware of any particularly hazardous situations. Each time we are confronted with that, we do look into that and ensure that we did not have previous knowledge of any potential vulnerabilities in the system.

Senator DOMENICI. Can you give us for the record a brief overview of the findings from the inter-agency performance evaluation team to date?

General STROCK. Yes, sir. For the record or here, sir? Here. Sir, I would be happy to expand in the record, but I can tell you that we have gotten to the point now where the IPET has reached some conclusions about the performance of the system. Specifically, in the 17th Street Canal area we have now concluded that we did have a problem with the design of the structures there, something we had hoped would not be the case, but now must confront that as a reality.

That finding is being reviewed by the American Society of Civil Engineers and we expect their response to that soon. So that is one of the most significant findings to date.

Other findings that the IPET has arrived at have to do with the storm surge in the Mississippi River gulf outlet, "MRGO," and the conclusion on that is that it does contribute to some degree in storm surge on the inner harbor, but to a very small degree. Point-two of a foot is being attributed to MRGO and I think that is an important aspect to consider in the future.

But sir, the most dramatic conclusion is that, yes, we had a design problem and that there may be other elements in the system designed along that way that need to be addressed.

Senator DOMENICI. As I understand the current situation concerning the levee rebuilding, funding provided through enacted supplemental appropriations will complete the levee system as currently authorized. This includes rebuilding levees to the authorized levels, that is to the authorized level of protection, I should say, as well as repairing non-Federal levees and pump stations. This system was not completed before Katrina; is that correct?

General STROCK. Sir, the system was not completed before Katrina. There are several projects involved in this, about six in all. Our estimate is that we have sufficient funding to complete those systems by September 1, 2007, and with the third supplemental to provide some enhancements like those you discussed.

I must caveat somewhat, though, sir, because the IPET results call into question the flood walls that we are using, we may have to replace some of the flood wall sections. Replacement of flood walls is not currently in our current estimates, with some small exceptions in the inner harbor area. So there may be an additional requirement to rebuild flood walls as we get into this. But generally speaking, we feel like we have sufficient funding.

Senator DOMENICI. I am not going to have time to go through this very difficult and bothersome issue of the $6 billion authorization that has been alluded to by Director Powell and what should be done with it. Suffice it to say that I will submit to you three, four questions regarding that whole situation. Would you answer them as soon as you can?

General STROCK. Yes, sir.

Senator DOMENICI. Then I have a number of questions on continuing contracts and reprogramming, which were very difficult for us to handle in this budget. We had a very hard time as we tried to put it together. I will submit those to you and you can answer them as soon as possible.

General STROCK. Yes, sir.

Senator DOMENICI. Now, having done that, I am going to yield the gavel to you, Senator, and you do it as you see fit between the two of you, and we may return and we may not. But would you close it if we do not?

Senator DORGAN. Senator Landrieu, what did you want to say?

Senator LANDRIEU. Before Senator Domenici leaves, I just wanted to thank him for his focus on this Katrina-gulf coast issue. He has really been focused, as has his staff, with trying to come up with solutions as well as suggestions. So thank you, Senator, and I will have some others to follow up.

Senator DOMENICI. I did not mean to be critical. The General understands. These questions I am asking have to come out and we have to decide how to fix this, and it is very difficult to explain to the public and we need your help in explaining it. The authorized level and all this business, it does not mean much to people, but it is very, very much the order of the day for us on where we spend, why we spend, what we did not spend. So we need to work together on it.

General and Mr. Secretary, thank you. Thanks for your help in New Mexico, too. I skipped over that. Particularly, I thank you for the Acequias funding. Since you funded it, I am not going to ask you whether you can say it or not. Normally I try to find out if you can pronounce it, but if you can put the money in I do not care whether you can pronounce it or not.

Thank you very much.

General STROCK. Thank you, sir.

Senator DORGAN. Senator Domenici, thank you very much, and we will ask our questions and then adjourn the hearing, after we have done some legislative business.

Senator LANDRIEU. You do it, we will fix it.

Senator DORGAN [presiding]. At any rate, we appreciate the courtesy of Senator Domenici.

Let me ask a couple of questions, and state first that at the moment the Red River is running north. It is flooding, well above flood stage at Wapaton, crested now, we believe, yesterday in Fargo. It is now being steered through the city of Grand Forks.

This budget requests the final $12 million for the flood control project in Grand Forks. We appreciate that. We have spent a lot of money on flood control projects up and down the Red River. That is I think a success story for the Corps of Engineers and we appreciate very much the work the Corps has done and believe that this is the last contingent of money that is required to complete the Grand Forks flood control project. So I want to say, especially in areas where we have seen really excellent work by the Corps, that we appreciate that, because we are experiencing this flood. I think it is the third highest in history, these crests, not so far from the 1997 crest in which the entire city of Grand Forks was evacuated. It is a pretty aggressive flooding.

Let me ask General Strock and Secretary Woodley about a parochial issue, but nonetheless an important one, the Fort Stevenson Marina Project at Fort Stevenson in North Dakota. The Corps of Engineers built a marina at Fort Stevenson and in half of the years you have not been able to see the water from the marina, so it has been unusable. I have been up there many times.

We finally created a circumstance where the Corps said they will move over—it is about 1 mile—and do a deeper water marina. It is not something that would break the bank, but the Corps made a commitment to do that. They were going to reprogram funds to do it. Now I think there is a question of whether the Corps is prepared and willing to proceed.

Can you tell me what the current thinking of the Corps is and what your commitment is?

General STROCK. Sir, what I do have on that is that we estimate that it is about an $11 million requirement to accomplish the move-

ment of the marina. And yes, water is down, as it is throughout the northern reservoirs. And I would assume, since we have identified the cost associated, we feel like we can do it. But we simply do not have the money to do that now.

Senator DORGAN. When Mr. Rob Vining was making the commitment on behalf of Corps, he talked about using reprogrammed funds.

General STROCK. Yes, sir.

Senator DORGAN. It actually was $5 million. Back then the cost was around $5 million or $6 million to do this. I do not know how the Corps has gotten this to an $11 million project. But the problem is these folks have a marina that's unusable. It is the Corps' marina. The regulation of the water—instead of retaining water in the upper reservoirs, we have been flushing it out so that my friend from Missouri can run his barges down south. So folks who want to use a marina at Fort Stevenson do not have a marina to use, and moving a very short distance would give them a deep water marina and it would not cost a great deal. The Corps of Engineers actually built the first one. We have not been able to use it every other year.

So it seems to me the Corps has a responsibility to provide the money to move this.

General STROCK. Sir, I can certainly provide you a better informed answer for the record on why the cost has shifted. If we are relying on reprogramming, I think you understand the limits on reprogramming right now that have been placed on the Corps, and it is very difficult to find both sources and then get approval of moving money. That may be a factor in not being able to move ahead on this.

Sir, we certainly recognize the challenges of the drought. It has been going on for many, many years and we are trying to operate the system in accordance with the master manual, which has been recently revised and approved. And we do know that it does cause problems for everyone in the system, not just the upriver States but the downriver as well.

Senator DORGAN. Well, General, I am going to submit a list of questions about this. But I do think the Corps has a responsibility at Fort Stevenson and I do not know how you meet it. We have a presidential budget now that cuts $0.5 billion. I know you are getting some emergency funding, but in terms of regular funding a cut of $0.5 billion when you have unmet needs, you have commitments that have been made that are not now apparently going to be kept, that is a pretty unsatisfactory response to tell to the folks up in the northern part of the reservoir.

The upstream benefits of tourism, recreation, fishing are ten times the size of the downstream benefits of barging, and yet we continue to see that water rush out of those gates headed downstream.

You and I have more to talk about, I think, as well as the Secretary, about how we meet the responsibility to the people who have been told by the Corps that the Corps would move that Fort Stevens marina.

General, let me talk about a subject that you are not going to want to talk about at all. But I have tried to do this by submitting

questions last year. I have tried to do this by letter to you, and I have never gotten a satisfactory answer. That is the Bunnatine Greenhouse issue and the Rio contracts.

I have as a result of magazine reports of what has happened at the Corps of Engineers, I have held policy committee hearings. Ms. Greenhouse has testified. She has been demoted, perhaps for that testimony or perhaps for other reasons, but she has been demoted. And she has said that—let me read her quote—"I can unequivocally state that the abuse related to the contracts awarded to KBR, a subsidiary of Halliburton, represents the most blatant, improper contract abuse I have witnessed during the course of my professional career."

It takes a lot of guts for somebody to say that. She was given excellent recommendations all along the way during her career, a remarkable public servant. People outside of your agency who know about contractors tell me that she is a first-rate contract official in the Corps of Engineers. And for this candor she has lost her job, been demoted.

I know there are legal issues in the Pentagon. You probably cannot respond to the legal issues, but you could respond at least by letter to me, and you could respond to the questions that I propounded last year during the hearing about what is going on here.

I assume that you will probably want to say that she is wrong, there are no contracting abuses. I assume also that the inspector general is looking into all of this. What has been appearing in the popular literature, magazines and others, about this situation is deeply troubling to me—the RIO contract, the LOGCAP contracting, substantial evidence of abuse, waste, and even fraud in sole source no-bid contracts in Iraq.

I have tried, both in letters and in submitted questions, to get candid responses from you and have been unsuccessful. Can you tell me why?

General STROCK. Sir, first of all I need to make sure that we have responded in a timely way to your questions, and I will have to go back and look at those responses. There are limits to what we can talk about in this and one of the most important aspects of this entire thing—and this may sound somewhat contradictory to the situation you just laid out—is that we have an obligation to respect the rights of the individuals and privacy of the individuals here. So my ability to talk about specific reasons for actions we took is very, very limited.

Therefore I must simply say that we have a process that is very important to us. We followed the appropriate process in disposition of Ms. Greenhouse's case. And I think that has been reviewed on multiple times. She has been——

Senator DORGAN. If Ms. Greenhouse would waive those provisions, if she would waive that and allow you to say whatever you wish, would you be willing to do that?

General STROCK. If that is possible, sir, and it was done in the right kind of way and I was cleared to do that, yes, sir, absolutely. I would be happy to do that. But it is all about protecting her privacy.

Sir, in terms of the allegations, I can talk about those a bit. I was personally involved in many of those decisions and can look

you right in the eye and say that we followed the rules that were in existence at the time to make all those calls. The Government Accountability Office has reviewed the award of those contracts and has found that they were done in a proper fashion. The Army Inspector General has also conducted an investigation. The DOD Inspector General has also conducted investigations. And to date we have not had any indication that things were not done properly in the award of those contracts.

There have been many questions about the actual delivery of products and services under those contracts and in most cases I think the Government has shown to have acted in a reasonable and appropriate manner in adjudicating claims paid and all that sort of thing.

So this entire thing has been looked at in many, many ways and many times and so far the results are that we did things in the proper way.

Senator DORGAN. Well, General, I also have looked at some of them and had whistleblowers come and testify and it contradicts that answer. Food service, water quality. I will give you an example. I do not know whether you had these, the water quality contracts, on the bases. Was that yours?

General STROCK. Sir, I did not. This particular contractor has a number of contracts. One of them is the LOGCAP contract, which is managed by the Army Materiel Command, which provides for sustainment on military bases. Our contracts had to do with the reconstruction of the oil industry, so the food and water issues that you cite were not part of our contracts.

Senator DORGAN. Yours were the RIO contracts?

General STROCK. Yes, sir, ours was RIO.

Senator DORGAN. I just observe on the LOGCAP contracts that both the Department of Defense and Halliburton have been dishonest publicly about that. We now have internal documents from Halliburton that show that the responses by DOD and Halliburton were not honest.

General STROCK. And I cannot speak to that, sir.

Senator DORGAN. My understanding from the inspector general on the issues surrounding the allegations Ms. Greenhouse made is that there has been a referral to the Department of Justice for a criminal investigation. Is that not accurate?

General STROCK. Sir, I do not know that. I know that there are a number of proceedings related to her case that are going on right now and I am involved in some of those. But I do not know if they have risen to the level of the Department of Justice.

Senator DORGAN. I believe the inspector general has told us that in a letter.

My point is not to badger you about this, except that there are questions that demand answers. The American people demand answers.

General STROCK. Yes, sir.

Senator DORGAN. We are spending an enormous amount of money on these projects, contracts, the RIO contracts, LOGCAP projects, feeding troops, providing water to troops, equipment to troops, oil. The fact is there is a substantial amount of evidence there has been dramatic waste and abuse and in my judgment

fraud. The Custer Battles issue comes to mind. I am not going to lay all this on your shoulders, but I am telling you it makes me sick when you take a look at what is going on and the waste of money, and nobody seems to care very much.

All I am asking is that, with respect to those issues under your jurisdiction, that you respond fully to the questions we are asking. And if you cannot answer, I will ask Ms. Greenhouse if she will provide a waiver so that you can give us all the information.

I know that you are going to leave this room and mutter things that I probably should not say out loud under your breath, because this is not what you want to hear at this hearing.

General STROCK. Sir, not at all. If I might, not at all. I share the same concerns you do. We have to treat people in the right ways, and I think we have done that. So no, sir, I am not going to mutter anything on the way out of the room.

Senator DORGAN. One other question. The person that has been noticed in at least one publication to replace Ms. Greenhouse it appears to me has no contracting experience.

General STROCK. Sir, her replacement is Ms. Sandra Riley, who has come to us after about 40 years of Government experience. She did serve as a head of contracting agency, which is the same level of responsibility that I have within the Corps of Engineers, and she managed all the affairs for the Department of the Army and the Pentagon related to that.

It is true that she is not an acquisition certified professional under the Defense Acquisition Improvement Work Force Act. But she has been given a waiver for some of the criteria and she has gone to school and is currently being brought up to speed on what it is she needs to know as a contracting official.

She is really coming to us as a change agent, sir, which she has a reputation for in the Army, and she brings us leadership. It is part of the Army's intent that, like our general officers that can serve in many capacities, our senior civilians are expected to be true corporate leaders as well and do not necessarily need the specific experience and credentials of the particular area of the government that they are working, that they have oversight for.

Senator DORGAN. General, with due respect, that seems illogical to me, to have to bring her up to speed with respect to knowledge. My colleague here from Louisiana has just experienced FEMA's failures. Seven of the top eleven positions in FEMA were staffed by cronies, I am sure who had good management experience, but did not know a thing about emergency response. So you put cronies in positions for emergency response, they did not know how to respond to an emergency.

I am just making a point that Ms. Greenhouse, fairly or unfairly—I guess ultimately the facts will judge this—lost her job, was demoted, for speaking out about what she perceived to be abuses. She regularly had excellent recommendations, excellent performance evaluations, year after year, but has now been demoted and replaced by someone who has no experience or no substantial knowledge in contracting. That just seems unbelievable to me.

General STROCK. Yes, sir, I would not characterize her as having no experience, no substantial knowledge, but she is not certified as an acquisition professional at this point, that is true.

Senator DORGAN. Well, we have more to exchange on that and I will do that by letter, General Strock. I hope and expect we want the same thing, that we want accountability and we want facts to speak for themselves.

Let me close then on a positive note so that I can tell you again, we have—we are a semi-arid State. North Dakota would hold ten Massachusetts in land mass. We are a big, big State, and 642,000 people spread out. We have got a big Missouri River running in one part of it and we have got a Red River running north.

We have a lot of water issues. We have got a flood in Devil's Lake that came and stayed, and it is a huge problem. We have got the need to move water from western North Dakota to replenish the Red River in times when it does not have enough water. At the moment it is busting out of its banks and flooding in three large communities.

So having watched the Corps of Engineers in 1997 in action, I can tell you that the performance of the Corps to do well is critical to our surviving during floods and surviving during droughts. I have not talked at great length about the management of the Missouri River today, but that also is a significant part of our angst.

But you have men and women working for the Corps of Engineers that work day and night at times when we are in crisis, and I hope you and the Secretary will communicate to them our appreciation for that. I know they are doing that now up and down the entire Red River valley and we want you to tell them thank you on behalf of a grateful citizenry.

General STROCK. Sir, thank you very much.

Senator DORGAN. Senator Landrieu.

Senator LANDRIEU [presiding]. Thank you, Senator Dorgan.

Mr. Secretary and General Strock and others, I want to begin by acknowledging that you have been down to Louisiana, Mississippi, and the gulf coast many times since Katrina and Rita and the multiple levee breaks that ensued, and you have sent extra support and been attentive to our requests. So I say that just to acknowledge that in my view you personally have done what you can.

But my questions will be about the constraints that you are operating under, which I think are very serious and actually in fact put the Nation at risk. I want to start with you, Secretary Woodley, if I could. Could you just for the record before this Appropriations Committee that has the task of funding critical civil works projects for energy and water for the country say again clearly for the record what we are going to be able to fund this year and what we are not, based on what is the backlog of authorizations? And if you do not have that, I think General Strock or others might.

What is our current backlog of authorized critical projects that is not going to get funded based on the budget that you have submitted?

Mr. WOODLEY. Senator, I want to preface what I say, I think I understand what you mean by the backlog. It is a term, it is a sort of a pejorative term for these, that I try to avoid because I regard those projects not as being projects in some kind of backlog, but

rather it being opportunities that exist for investment on the part of the Nation in water resource development.

Senator LANDRIEU. That is fine. Then what are the opportunities that we are not funding?

Mr. WOODLEY. I believe that we have something in excess of 400 different projects across the country that are eligible for Corps funding, and of those I believe that about 90 to 100 are actually receiving funding in the President's request.

Senator LANDRIEU. With the number about $44 billion be about accurate, $44 billion, opportunities that are not funded?

Mr. WOODLEY. That might—well, of course that would not be in any given year. That would be the total build-out for the entire amount.

Senator LANDRIEU. That is correct.

Mr. WOODLEY. But I cannot confirm the number, but it would not surprise me.

Senator LANDRIEU. Well, let me then try. I am going to say a number and if you disagree with me for the record then you can get back in writing. But basically our records reflect, my records reflect, that we have about $44 billion in—let us use your word—opportunity to protect Americans from flooding, to promote navigation and economic development, and to protect wetlands, coastal restoration, et al., as described in the charge.

And the way that I look at it and many Members of Congress is we are about $42 billion short, because in this budget we have approximately $1.5 billion for new construction, then *x* few billion for operations and maintenance.

But I want to focus on, because all the hearings are, as you testified, we have 5 percent more money than last year. Since the last year number is irrelevant to the people that I represent, 1,200 of whom who have lost their lives because it was too low, 5 percent more does not have any relevance to me or to the people I represent or to the gulf coast. So I am going to try to focus us on what the real pending crisis is. That is that this budget is so far short of where this Nation needs to be in investments in civil works it is almost in my view not worth discussing.

For the record, I want to be clear that there is 44—before we pass the next WRDA bill, which 88 of us have signed on to get passed, which will add how much, $10 billion to $13 billion in new authorized projects which everyone is clamoring for, we have $44 billion worth of projects that do not have a penny allocated to them in this budget.

Now, that is the first point. The second point I want to make is I want to show you a little chart of why this is of significance for the country. I am going to provide this to the members. This is a chart that I got from the National Civil Works—American Civil Works Society. You can see it goes back to 1929. This is 2004, I guess. This is where the levees broke in New Orleans, the bottom of this long, dangerous, nonsensical, irrational, irresponsible, funding level. This is where they broke.

You can see what happened in the early part of the century, and even just going back as recently as—this is a percentage of GDP. This is the investment gap in America today just on civil works. But it is not just civil works; it is all water projects, all flood con-

trol projects in the country. And this is a disgrace. This budget is a disgrace because of that.

The paragraph that introduces this budget I would like to read, is an insult to me and the people that I represent: "The fiscal year 2007 civil works budget is a performance-based budget which reflects a focus on the projects and activities that provide the highest net economic and environmental returns on the Nation's investment or address significant risk to human safety." That is an insult to the people I represent because it is a lie, because it does not.

Now let me ask you this question. When the Corps conducts a feasibility study on hurricane protection projects, does the current law direct you or indicate to you that you have to conduct that feasibility study for life and property, or is it just for property? Do you take human life into your calculations, technically? Do you do, General Strock? To General Strock or really to the engineers. Go ahead.

General STROCK. Not per se, ma'am. We do not take that in as a factor. We use sort of a surrogate for that, which is we do consider economic development, and typically where there is economic development there are people. So the main driver is economics and tradeoffs there.

Senator LANDRIEU. I just want to call to the attention of this committee that that is something that we are going to have to take a look at, because this comment about human life, human safety, is a stretch based on the fact that it is just extrapolated from economic data. So some of us are looking very closely at asking for human life to be a calculation in these studies because it may have a direct impact then on whether some of this gets built or not.

But that is why I take issue with this, because it is not included right now—I know that for a fact—in your assumptions.

General STROCK. Ma'am, if I could just modify a bit. That is not our traditional method of valuing human life and human lives exposed, but this year we do have a criteria in the budget that for a given likelihood of an occurrence for a certain amount of flows, for the density of populations, we do consider projects as high-risk projects. It has to do with warning time, people in the flood plain, potential depth of flooding and velocities.

So this year in looking at high risk projects that should be supported, we have taken that into account.

Senator LANDRIEU. Well, I appreciate you taking that, that extra step, because in the current laws, which we are going to recommend be changed, that has not been in the past calculations. And besides these numbers being low, that is also a critical component, with populations moving closer and closer to water, whether they be coasts or along great rivers or lakes, et cetera. It becomes a real serious issue that makes these numbers that are pretty devastating even worse.

Let me ask for some clarification on the $6 billion, and whoever can answer this the best. Last week our administration received what I consider a bombshell of an additional $6 billion that is needed to meet the current authorization levels or the current safety levels or the certification, if you could explain which of those it is. How did you arrive at that figure and do you think it is accurate

for southeast Louisiana? And I do not know who wants to take that. Maybe General Strock. You conducted the—

Mr. WOODLEY. Actually, Senator, that figure had to do with the question that was raised to the Corps at the local level, at the district, on making assumptions with respect to the base flood elevation that may eventually be determined by the FEMA for the new flood maps. The question there was, can you give us a rough order of magnitude, a very-swiftly-arrived-at estimate of what the outside cost to raise those levees by a certain amount might be.

We have—the only thing I can tell you is that we answered that question. Those figures have been—are being refined even now, so I would not——

Senator LANDRIEU. So you are saying, you are saying that FEMA requested that information of you?

Mr. WOODLEY. Yes, ma'am.

Senator LANDRIEU. FEMA requested that information. How long did they give you to—when did they request it? And when you said you hurriedly put it together, did you put it together, General, in 2 weeks or 3 weeks or 5 weeks?

Mr. WOODLEY. I would say perhaps even less than that. I am not exactly sure of the precise chronology, but it was a very swift question. It was based on, as far as I understand the estimate——

Senator LANDRIEU. Did you take more than 48 hours to put it together? General, try to testify. How long did it take you to put that together——

General STROCK. Yes, ma'am. If I could just back up a bit and talk——

Senator LANDRIEU [continuing]. And is it accurate?

General STROCK [continuing]. About the process here. Mr. Woodley cited the base flood elevations, which determine the 100-year flood plain that is identified by FEMA. We participate and support FEMA with hydrologic studies to determine just what that flood plain should look like. So we are a supporting agency to FEMA in making that determination.

We all recognize that after a storm of the magnitude of Katrina that it would impact the base flood elevations that would be applied post-Katrina, because Katrina is such a massive storm that it really influenced the record which is used to determine that.

It was about the November time frame, I think, when we concluded what those base flood elevations should be, and in fact we have issued those advisory notices in all the counties and parishes along the coasts that were impacted except for the four in the New Orleans area. We did not at that time go forward because the initial feeling was that it was such a high elevation that it would make a dramatic impact. So what we asked is that we should delay the issue of those base flood elevations until we had time to really do some more refined analysis, and then also to consider the impacts.

In the process, we determined that, given the base flood elevations that we arrived at, we could not certify most of the levee system around New Orleans to a 100-year level. It was not an important question on the gulf coast in Mississippi because there are no levees to certify. It is what it is. But when you are behind a levee, if you can certify the levee to a 100-year it essentially takes

out the people and infrastructure behind that levee, it takes them out of the flood plain.

So our ability to certify levees was then an important question. As we did that analysis, we determined that in most cases we could not certify the levees to 100-year protection levels, which essentially puts everybody in the flood plain and they act like the levee is not even there. So it has tremendous implications.

As a result of that, we were asked what it would cost to raise the existing projects to 100-year level, and the number that Chairman Powell put out last week was a preliminary estimate which we are continuing to refine. I think that you will see at such point as a decision has been made on this that you will see that estimate should come down somewhat.

Senator LANDRIEU. Okay, I accept that and I know that this number can be refined. We are actually hoping that it is refined. It is hard to get any money around here, let alone $6 billion, so we are hoping it can be refined.

But I just want to press this for just a minute. You said 1-in-a-100-year flood. Would that roughly equate to category 2, 3, 4, or 5 roughly? I know they do not match up, but if you had to chart it what would it be?

General STROCK. I cannot answer that. I am not sure there is a direct correlation between the flood plain and the categorization of storms. What that tells you is that in that area that there is a 1 percent chance in a given year that you will see a storm of that magnitude.

Senator LANDRIEU. What do we have now in the other parts of the city? Is that the same 1 percent in 100 years?

General STROCK. Ma'am, about—well, first of all, I think 70 or 80 percent of the city is already in the flood plain. This just adds more to that.

Senator LANDRIEU. That is not what I am asking, what is in the flood plain. I am trying to ask—I am trying to establish, so I can compare apples to apples—the $6 billion which you have recommended, which will be refined, let us just say it is refined to $4.5 billion. That number, whatever it ends up being, is going to build category 2, 3, 4, or 5 levees around the areas that you have proposed, just roughly? There is no way for you to say whether they are 2's, 3's, 4's, or 5's?

General STROCK. I truly cannot answer that. I think that we are wrong in trying to describe these systems in terms of the category of storms they can protect against. That has been one of the challenges throughout, that we simply do not build the category system for hurricanes——

Senator LANDRIEU. It may not be the accurate way, but I can tell you one of the things that I am going to press very hard as a Senator is to have some way. It does not have to be a category 1 through 5. It does not have to be 100 to 10,000. But I have to have some way to explain to people that the levees are going to be either 1 foot, 4 feet, 5 feet, or protect them from *x*.

So I suggest if you do not like the way we are doing it, General, we have to come up with a way that is clear to people, that is transparent, that everybody understands, like this is a $1 bill, you know what a $1 bill is; this is a $10 bill, this is a $100 bill. We

cannot give you a $100 bill; we are giving you a $1 bill. People are clear.

We need that, so it does not matter to me. So I am going to leave that there, but I have to come back to this question. But let me try, without having the benefit of any levels or any storms, just say, ask you this way. Whenever we get this dollar amount, if we do not get this dollar—let me just put it this way. If we do not get this dollar amount that will be refined, what happens to those areas in four parishes? They either have to build up to about what height or what? You said—you did not release the heights. I am not asking you to. But the general height, is it 13 feet or 20 feet or 25 feet?

General STROCK. I would have to get back with you, ma'am. It varies by where you are in the city.

Senator LANDRIEU. Could you give just a range of those four parishes that you looked at? I know you have it in your data. You had to have it.

General STROCK. Early on, I think in the November time frame, it was about 17 feet, something like that. The challenge here, ma'am, is that if the levees are not certified to a 100-year level then FEMA acts as if they are not there at all. The fact is there are levees providing protection and you are not going to be fully inundated because there are levees there.

What we are trying to do to articulate the level of risk is to show levels of inundation in a Katrina-like event that would occur on June 1, 2006 when we complete our current work, what we would see on September 1, 2007, and then, if we certify it at 100-year and we build the levees to that, what people could expect in different parts of the area in terms of depth of the water.

That is how I think is the best way to articulate the risk associated with this.

Senator LANDRIEU. Well, that may make sense to you, General, but we are struggling with trying to make that sense to 3 million people that live in south Louisiana and just need to know whether the hurricane levees are going to be at a category 3, 4, or 5 or some equivalent of that and whether it will work or not.

But I am going to leave the testimony at: you are refining the number, it is a real need for these four parishes, and you have not requested it in the budget.

General STROCK. That is correct.

Senator LANDRIEU. Secretary, can I ask you, does the President have any intention of requesting this or what do you think the status of that is?

Mr. WOODLEY. I believe that that is a decision that has not yet been made by the President.

Senator LANDRIEU. So we still can remain hopeful that perhaps it might be forthcoming. I will just remain hopeful today.

Mr. WOODLEY. Yes, ma'am.

Senator LANDRIEU. Is there anything that you—I just wanted to—I have 100 questions I could ask, but I wanted to try to hone in on the $6 billion, on the study, and on the general lack of funding, which I will conclude by saying that because of that chart I would suggest that Katrina and Rita have, I hope, ripped away the curtain of complacency, that we have had a false sense of security

in this country about the investments that we are making. They are not adequate, and if we do not find a whole other paradigm we just cannot not only protect the people along the gulf coast, but we are investing so little of our gross national product in what I would think are essential, essential civil works projects, for not just trade and commerce but for humans, safety of human life. And the safety and protection of billions of dollars of investments that we have made all along the coast and all along the great river systems and all along the great lakes systems of America are at great risk, because this line is about off the chart. You cannot get much lower than where it is. You literally cannot go any lower on the chart. You would be off the page, down to zero. Would you hold it up again?

There is nowhere down to go. And it represents less than, I think, one-tenth of what we spent in 1929 or 1930 and one-sixth of what we spent in the 1970's.

This is what our delegation, just in conclusion, has been looking at, this precipitous falloff, and thinking we have a coast that has to be saved, wetlands that are washing away at an alarming rate, levee systems that are underfunded and underdesigned, and systems that have to give added money.

So we have got to change this, and we have recommended for us a solution is getting revenue, offshore oil and gas revenue, to start investing in the gulf. We have even recommended sharing that with the other States to help them. Of course we have been rebuked. We cannot do that. So now we are down to just trying to find for Louisiana, Mississippi, Alabama, and Texas a new source of funding to help get these civil works, essential civil works projects, up.

Because I said, this is where the levees broke. It is just a matter of time until they break again some other place because we are not investing nearly the money that we need to. In all fairness to this administration that I have been very critical of, this did not start with the current administration. It has been going on quite a long time.

But I would say one final thing. The reason I am remaining somewhat critical is in these years we did not always have surpluses, but when we had surpluses we chose to do something else with them, and funding of civil works was not one of them.

So we have a lot of work to do on this budget. Senator Domenici has been very, very kind to let us go on. But the $6 billion issue has to get resolved. The way we define levee protection, you pick a way, tell us what to do so people understand it. Then the overall budget number for this budget is something we are going to have to work on.

Do you want to add anything before we conclude?

General STROCK. Ma'am, the only thing I would add is, one of the ways that we can get at the business of articulating risk is using the money that you gave us in the third supplemental to create a national levee inventory and database, and this budget also requests additional funds for that. That would allow us to capture all the levees in this country from private through Federal and then to build a model that would allow us to articulate risk and reliability associated with those, and that will really frame the prob-

lem and the potential for investment and help us set priorities. So I think that is a wonderful step that needs to be done.

Senator LANDRIEU. I thank you, General, for raising that. I wanted to get a status report. I would just ask you to submit it in writing, not to take any more time. But I am glad we were able to get that study in for the Nation, because then you are given an opportunity to present to the Congress the real needs, and then it is up to Congress to decide and this administration, are we just going to not fulfill our responsibilities, pretend like it is not a real risk, hope we do not get any more hurricanes, pray no river goes over its boundaries?

I mean, this truly is a Nation at risk right here at home. And I know we have risk around the world and I am cognizant of what we are doing in Iraq, but I hope that the study—and you should be finished with that when? I think it was June?

General STROCK. There is a preliminary——

Senator LANDRIEU. A preliminary in June.

General STROCK. August.

Senator LANDRIEU. In August. Preliminary in June and then a final in August. That will help us. That will be very helpful to the country.

Our situation is more urgent, as you know, because hurricane season starts in 2 months. But we will continue to work on it.

General STROCK. Where the New Orleans levees are concerned, we are doing a study now for those areas that were not obviously impacted to make sure that they are still structurally intact, and that will be done certainly in June.

The preliminary report on the levee inventory will be in August, not the final report.

Senator LANDRIEU. Anything else, Mr. Secretary?

Mr. WOODLEY. Thank you, Senator. It has been a real privilege to work with you and the rest of the Louisiana delegation on these important response issues and we appreciate your continued support for the agency and assure you that we take your views very, very seriously.

ADDITIONAL COMMITTEE QUESTIONS

Senator LANDRIEU. Well, I appreciate that. You have worked very closely with our delegation. But this is just not—this current system does not work. It does not work, did not work for us, does not work for anyone. We have got to have some serious change.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SENATOR PETE V. DOMENICI

REGULATORY ISSUES IN NEW MEXICO

Question. General Strock, I have had Colonel Wang in my office a couple of times this year concerning a couple of permitting issues with the city of Albuquerque. One of these concerned the Montano Bridge, which has since been resolved, the other was the Paseo Del Norte road extension.

The Paseo project involves crossing an arroyo and the issue had to do with the permitting required. I am simplifying the chain of events here for brevity. The city originally planned to cross the arroyo with a culvert. The permitting requirements became so onerous for the culvert, particularly with Corps' discretionary decisions

concerning historic preservation consultation, that the city has committed to me that they will build a bridge instead. A bridge will be considerably more expensive. I have not heard any status on this project lately.

General Strock, do you know the current status of this project?

General STROCK. The Albuquerque district is processing the Paseo Del Norte as a Nationwide Permit 14 and 43 for a culvert crossing of Piedras Marcadas arroyo. The district made a finding of no adverse effect to historic properties. The Advisory Council on Historic Preservation (ACHP) objected to the district's determination. As required by the National Historic Preservation Act, the district is reevaluation their initial finding of no adverse effect and will provide their decision to the Advisory Council on Historic Preservation in accordance with the requirements of regulations 800.5(c)(3)(ii) and 800.5(c)(3)(B) in the Code of Federal Regulations, Title 33, Appendix C. This completes the Corps responsibilities under section 106 of the Historic Preservation Act.

Question. Can you comment on the Corps discretionary roles in the permitting process, particularly in the area of historic preservation?

General STROCK. Compliance with Section 106 is required for all Federal undertakings which include issuance of Federal Permits in jurisdictional waters of the United States. The Corps of Engineers uses nationwide general permits and individual permits to authorize activities in compliance with the applicable laws and regulations. The Corps of Engineers must ensure activities comply with the National Historic Preservation Act regardless of the type of undertaking. The Corps has responsibility for determining the appropriate scope of analysis and the effect of the undertaking, in this case the activity in waters of the United States, on historic properties, including the direct and indirect effects of these activities. The Corps must also afford the State Historic Preservation Office (SHPO) and the ACHP an opportunity to comment on its determination of effect. The Corps must document how it considered the opinion of the ACHP and SHPO in its administrative record for the permit decision. Once this is accomplished the Section 106 process is complete.

Question. Also in New Mexico, there is a railroad project called Abo Canyon. This canyon, which is about 4.5 miles long, has only a single track through it and, as a result, is a major railway constriction from the west coast to the Midwest and beyond.

To maintain efficient transit of goods, it's essential that a second track be constructed through the canyon. I'm told that, before the railroad can construct a second track parallel to the existing one, they have to have a permit from the Corps because a grand total of 0.1 acre of wetlands might be impacted.

Now, General, these so-called wetlands are normally very dry—this being New Mexico—but I do understand why the Corps would have to be involved, given its Clean Water Act responsibilities. However, I don't understand why the Corps is requiring an archaeological investigation of the entire canyon, rim-to-rim, just because of this one-tenth of an acre of dry wetlands.

Can you explain why the Corps has required this, and why it isn't over-reaching on the part of the Corps in defining its jurisdiction?

General STROCK. The Corps of Engineers is evaluating the second rail track for the Burlington Northern Santa Fe (BNSF) Railroad project in accordance with its regulations under the individual permit procedures because the project will impact a total of more than 0.5 acre of waters of the United States at 24 separate locations along the proposed 4.5 mile alignment. The permit process has been delayed by historic property issues.

Most of the landowners affected by the proposed track have cooperated with and sold their land to BNSF. The property owners of Dripping Springs Ranch have not sold their land and oppose the project. BNSF initiated the condemnation process for this parcel; however, the process is currently in abeyance pending a final decision on the 404 permit. Thus far, Dripping Springs Ranch has not allowed BNSF to complete a required survey for cultural properties on their property. This is not an insignificant survey as BNSF has already identified over 100 historic sites along the proposed alignment. The Corps and BNSF are meeting with the property owners to resolve this issue.

Due to potential impacts to at least 17 of the 125 sites already identified, the Corps has determined that the proposed activity will have an adverse effect on historic properties and has sent a letter to the New Mexico State Historic Preservation Officer (NM SHPO) in accordance with the National Historic Preservation Act. The Corps will work with the consulting parties (BNSF, NM SHPO, Bureau of Land Management (BLM), the owners of Dripping Springs Ranch) to develop an MOA to mitigate for the adverse effects to historic properties in accordance with the regula-

tions and law. BLM is involved in this process as BNSF must acquire a small piece of land from BLM to complete the project.

The district expects to conclude permit evaluation, including the MOA to address adverse effects on historic properties, in August 2006.

DROUGHT

Question. As you may be aware, we are facing significant drought issues in the Southwest and particularly New Mexico this year. I wanted to let you know that I am seeking $5 million in the current Supplemental for the Corps to provide drought assistance.

Obviously this still has to be conferenced with the House before it becomes law, but can you describe some of the drought assistance measures that the Corps can provide under the Stafford Act?

General STROCK. The Corps is the Department of Defense Agent for Emergency Function 3 (public works and engineering) under the National Response Plan which is implemented pursuant to the Stafford Act. During a disaster, the Corps will do what is asked by Federal Emergency Management Agency under the Stafford Act pursuant to the National Response Plan.

Question. Are there any other programs within the Corps that would allow you to respond to drought?

General STROCK. There are several ways the Corps can help during droughts independent of the Stafford Act. These authorities are summarized below.

—*Emergency Provisions of Clean Water*.—Public Law 84–99, as amended. Water can be provided to a community that is confronted with a source of contaminated water.

—*Emergency Well Construction*.—Public Law 84–99, as amended. Authorizes the construction of wells or the transport of water.

—*Planning Assistance to States*.—Public Law 93–251, as amended. States may obtain Corps water resources planning expertise on 50/50 cost shared studies to develop plans related to the overall State water plan. This plan must be developed prior to any water shortage in order to be effective.

—*Drought Contingency Plans for Corps Reservoirs*.—Provides for release of water from Corps reservoirs during drought. Not in law, but is part of the operation of Corps reservoirs.

—*Drought Contingency Water*.—Section 6 of the 1944 FCA. When available, the Corps can sell surplus water to a State or political subdivision, which agrees to act as a wholesaler.

—*Reallocation of Storage*.—Public Law 85–500. This permits the reallocation of storage from an existing purpose to M&I water supply. This plan must also be developed prior to any water shortage in order to be effective.

—*Interim Use of M&I for Irrigation*.—Section 931, Public Law 99–662. This program is limited in that it is only applicable to certain projects.

KATRINA

Question. Hurricane Katrina was a terrible blow to this Nation. The costs in terms of human suffering are incalculable, and the costs of response and recovery have been staggering to the Nation's treasury.

General Strock, can you give us a quick status update of the current rebuilding efforts?

General STROCK. Task Force Guardian has awarded all of the 59 separate construction contracts identified as being needed to restore hurricane protection to southeast Louisiana. As of April 5, 2006, a total of 20 of the 59 construction contracts have been completed. Repairs to the Mississippi River levees (105 miles) have been completed and all vessels (155) have been removed from the levees and floodwalls. Of the 59 contracts, 54 (91 percent) were awarded to local businesses, 36 were awarded to small businesses, 15 were awarded to 8(a) firms, and 7 were awarded to HubZone firms. The total estimated cost of the repairs is $800 million.

Question. General Strock, I have been told that the United States Geological Survey says that the storm surge from Hurricane Katrina, is the greatest recorded storm surge to ever hit the United States. Can you confirm this? This was, in fact a large hurricane that struck, contrary to what may have been said. Is that true?

General STROCK. To our knowledge, the statement made by the USGS is correct. The highest "storm-tide" (surge plus astronomical tide component) other than Katrina of which we are aware of was generated by Hurricane Camille, 1969. Camille's "storm-tide" is given by the National Oceanic and Atmospheric Administration's National Hurricane Center as 24.6 feet at Pass Christian, Mississippi. Dr. Andrew Garcia, of the Corps' Coastal and Hydraulics Laboratory, recalls others re-

ports of around 27 to 28 feet attributed to Camille, but Katrina's "storm-tide" at Waveland, Mississippi was right at or exceeded even these undocumented Camille values.

Question. Along with everyone else, I have read numerous articles, from various "experts" about the levee failures in New Orleans. Most of these "experts" have indicated that the Corps was aware of potential problems with the levees as designed and constructed. Further there has been considerable comment that these levees should have withstood the effects of Katrina. General Strock, I need to know from you what is the Corps' response? Is there any fire to go with all of this smoke? Or is this speculation from self-described experts without access to all relevant data?

General STROCK. The Federal storm damage reduction system is composed of multiple Federal projects, authorized and constructed over many years. Some features had not yet been completed at the time of the storm. Others were built by the local sponsors and incorporated into the system under specific authorization language enacted by the Congress for this purpose. The Corps was aware that some areas of the levees were no longer at design grade due to subsidence or settling. We now suspect that design deficiencies may also have played a role in the failure of some I-walls. On a larger scale, the design of the built system was significantly different from the design that the Corps initially identified for the Lake Pontchartrain waterfront. To what degree the Corps was aware of these or other problems, or of the potential for such problems, prior to Katrina is a matter currently being assessed. I can assure you, however, that the way in which the Corps recommends projects and deals with any known, suspected, or anticipated problems is a matter that I consider critical to our future.

Question. General Strock, can you give us a brief overview of the findings from the Interagency Performance Evaluation Team to date?

General STROCK. The Interagency Performance Evaluation Team, or IPET, is an outstanding group of experts from government, industry, and academia that are literally working around the clock to complete an in-depth analysis of the performance of the Hurricane Protection System. IPET is looking at how the system was designed and constructed, the forces it experienced during Katrina, how the system performed, and what mechanisms caused the catastrophic breaching. IPET has done everything from putting boots on the ground to collect data and eyewitness accounts to pushing the modeling envelope with supercomputer model runs of Katrina's storm surge.

The IPET draft final report is scheduled for release on June 1. I expect both the consequence and risk analyses in that report will be invaluable tools to evaluate additional hurricane protection measures in the near term and for future higher levels of protection.

But IPET has already made great contributions from its findings to date.

IPET determined the failure mechanisms for structures that breached prior to reaching their design levels, such as the 17th Street and London Avenue Canals. This knowledge of "how and why" is being used to assess the integrity of all other similar sections of floodwalls in the system. These results also helped in the development of specific strategies to strengthen I-wall sections that are outside the outfall canals, including stability berms, relief wells, deeper sheet piles and limiting wall cutoff heights to significantly increase the stability of these structures.

IPET determined why levee sections failed because of overtopping and scour, such as those along the Inner Harbor Navigation Canal. This information has fueled repairs that include substituting T-walls for I-walls to increase resistance to scour from overtopping and resistance to failure from lateral forces, such as surge and waves.

IPET found levee sections that were overwhelmed by surge and waves with damages that related to the levee elevations and the strength of the levee materials. IPET lessons learned are being used to select the types of materials used in the levee reconstruction and the height of their construction in areas such as St. Bernard Parish.

IPET also found sections of floodwalls and levees that performed very well during Katrina, such as the Orleans Outfall Canal. IPET is providing these equally important lessons learned to the repair and reconstruction efforts.

Every lesson learned that IPET has provided has received immediate attention in the repair efforts. In some cases, repair design activities were halted and changed to take advantage of IPET knowledge. IPET work also helped validate significant temporary measures, such as the temporary gates and pumping capabilities at the Lake Pontchartrain end of the outfall canals.

IPET input is also being used in design guidance for enhanced protection projects to ensure the New Orleans area protection system is better and stronger than before. We feel strongly that the IPET contributions will help us achieve this goal.

Question. As I understand the current situation concerning levee rebuilding situation, funding provided through enacted supplemental appropriations will complete the levee system as currently authorized. This includes rebuilding levees to the authorized levels of protection as well as repairing non-Federal levees and pump stations. This system was not completed before Katrina. Is that correct?

General STROCK. That is correct, although cost increases are possible. Funding was provided in the enacted supplemental appropriations to repair the system to pre-Katrina conditions, to accelerate completion of the system and to rebuild those parts of the system that were below design height due to subsidence. Funding was also provided to repair non-Federal levees and pump stations. The money provided was based on the best information available at the time and it is possible that the cost for some of this work may increase. For example, at the time of the third supplemental, the IPET findings concerning floodwall stability were not known. Further, long-term subsidence will require that additional levee lifts be constructed for some of the levees in the protection system. These lifts must be constructed on average every 4–5 years until the subsurface soils stabilize. Funds provided through the supplemental appropriations do not cover these costs.

The system was not completed before Hurricane Katrina.

Question. Further, the President's latest supplemental takes the first steps to improve this system beyond the project originally authorized by authorizing and appropriating funding to remove many of the now obvious weaknesses in the system. This includes closing off the interior drainage canals and providing navigable closures on the Industrial Canal and the Gulf Intracoastal Waterway, raising and hardening interior pumping stations and armoring levees where appropriate. These seem to be a reasonably measured approach to improving the system, based on current information. Are you aware of additional work that we should be considering as a part of this supplemental?

General STROCK. The President's supplemental provided appropriate funding for these measures to improve the New Orleans hurricane systems. Additional work has been considered but we are not prepared to recommend these projects for funding at this time. Three of these include a more costly plan ($190 million) to deal with the interior canals that, if proven to be technically feasible, may be a more reliable method of providing interior drainage; a plan to incorporate into the system non-Federal levees on the East Bank in Plaquemines Parish ($94 million); and a plan to repair some non-Federal levees in western areas.

Question. Director Powell has recently indicated to the Congress that it could cost as much as $6 billion just to restore the levees in the New Orleans metro area to provide 100-year level of protection. Why has the 100-year level of protection changed so drastically? What is your confidence level in the cost estimates that compose this $6 billion figure?

General STROCK. Restoring 100-year certification is now a much different task than simply restoring the current levees, primarily because of the new storm data and new abilities to better predict storm impacts. Quite simply, the 100-year storm is now calculated to be a much larger storm than envisioned in the past. Also, we now realize that in some areas the generated storm surge, even from a smaller storm, can be significantly larger than was indicated by models in the past. Because of this new data, our task is not a matter of simply restoring or rebuilding the current levees. Based on analysis of an extended historical period of storm data including the Katrina and Rita events and utilization of more refined modeling technology now available, which considers such factors as losses in wetlands and natural lines of defense that may limit attack during major storms, land subsidence and other coastal area changes, the currently authorized grade of levees would not be high enough to prevent overtopping during occurrence of the revised 100-year frequency storm surge. In many places the levees will have to be significantly higher and stronger than they were before Katrina in order to provide protection from the newly calculated 100-year hurricane.

The $6 billion figure for the cost to complete the system to provide 100-year level of protection was a preliminary rough order of magnitude estimate at a point of time, and further analysis is needed.

Question. We have requested the Corps to undertake studies for improving protection to the New Orleans area to "Category 5". The interim report for this study is due in June 2006. Where would 100-year level of protection fall in improving levees to this new "Category 5" level? Is it possible that work undertaken to get to this 100-year standard would be incompatible with the "Category 5" level?

General STROCK. The revised 100-year level of levee protection for the New Orleans area would be at a lower grade than the grade required to protect the area from a major Category 5 storm using a single line of levee protection along the existing alignment. However, the 100-year levees along the basic "footprint" of the existing

levee system currently being repaired would function as a "useable increment" in a system of hurricane protection that utilizes multiple or redundant lines of protection.

Question. How does coastal restoration rank as a means of providing immediate hurricane protection? Long range hurricane protection?

General STROCK. The lessons of Hurricane Katrina show the dangers of depending upon a single line of levee defenses. The presence of coastal features, such as wetlands, cheniers, swamp forests, and barrier islands, prevent inland hurricane protection structures from being directly exposed to open gulf conditions during storms. Hurricane protection systems having direct exposure to the Gulf have greater potential for performance problems during storms, and will also likely have higher construction, operations, and maintenance life cycle costs. Protecting existing coastal features that provide this buffering function to current hurricane protection systems has short-term benefit, insuring against decreased system performance reliability and increased systems operations and maintenance costs over the project life cycle. Restoring coastal features is a long-term measure that should increase reliability of the existing and future hurricane protection systems that may be installed, as well as likely minimize their construction, operations, and maintenance costs over a life cycle.

Question. What do you see as the next steps in rebuilding the New Orleans levees?

Mr. WOODLEY. By June 1, we will be restoring the level of protection to pre-Katrina conditions. We have already begun the work to accelerate construction on some of the uncompleted features of the system and to rebuild subsided levees to design height and repair non-Federal levees and pump stations. The next steps are providing a better and stronger system, ensuring that floodwalls are reliable, building the system high enough to provide 100-year protection, and evaluating even higher levels of protection.

Question. As a result of Katrina, what have you learned about how flood control and hurricane protection projects should be evaluated? That is, how should we go about considering the possibility of serious risks to human life as opposed to evaluating projects strictly on the basis of economic losses prevented?

Mr. WOODLEY. Based on the lessons learned from Katrina, we need to take a hard look at our policies for establishing levels of protection. When risk to life is possible during events exceeding given levels of protection, this loss of life risk must be addressed as a part of the decision process on level of protection, along with the economics, that is, net benefits of each level of protection. Formulation considerations include minimizing catastrophic potential in areas where large populations are at risk or evacuations are not easily accomplished when emergencies occur. These technical considerations are currently imposed only for design of high hazard dams, and similar considerations need to be evaluated for high hazard levee and flood protection systems. For instance, we are using risk and reliability analysis concepts in the evaluation of alternatives for the South Louisiana Hurricane Protection report. It should be noted that selection of a plan that includes life safety considerations is permitted under the Principles and Guidelines for water resources planning, in that the agency head may recommend a plan that does not maximize net national economic development benefits.

As an interim measure, the fiscal year 2007 budget proposes funding for already authorized projects that provide significant reductions in life risks. I expect that future budgets also will address life risk considerations.

CONTINUING CONTRACTS AND REPROGRAMMING

Question. In the fiscal year 2006 E&WD appropriations act, the Congress made significant changes in how funds are to be spent, which will result in similarly significant changes in how the Corps manages its program.

General Strock, has the Corps assessed the impact of these changes on program execution and, if so, what are they?

General STROCK. The guidelines for reprogramming and the use of continuing contracts as set forth in the fiscal year 2006 E&WD appropriations act and accompanying conference report have brought about many significant changes in how we manage our Civil Works Program. We no longer emphasize expenditures as a measure of success. The volume of reprogrammings is significantly reduced. Reprogrammings that exceed the dollar and percentage thresholds established in the fiscal year 2006 act now require more coordination. We anticipate an increase of carry-over funds in the short-term as we realign our budgeting, planning, and execution practices.

Question. For many years, the Corps carried a fairly significant amount of its available construction funds unobligated from one year into the next. This unobligated carryover afforded the Corps flexibility in meeting unforecasted needs and was a practice generally supported by this committee.

Several years ago however, it became apparent to us that this practice must be changed and, at the urging of this committee, the Corps increased its execution performance and eliminated the carryover.

With the new program management practices required by the fiscal year 2006 E&WD act, will this carryover reappear? If so, how much will it be, approximately, by the end of the year? After next year, assuming a constant appropriation level?

General STROCK. As stated earlier, execution performance will no longer be measured simply by the percentage of funds obligated or expended and an increase in carried-over funds is expected. Our estimate of unobligated funds to be carried over at the end of fiscal year 2006, according to the execution schedules developed after the appropriation of fiscal year 2006 Energy and Water funds, is as follows. Dollars in are in thousands. Funds provided in supplemental appropriations as of April 5, 2006 are included and account for the majority of the total unobligated carryover.

Appropriation	Unobligated Carryover $1,000	
	E&W	Supplemental
Investigations	$49,495	$2,311
Construction	345,702	7,406
O&M	164,345	10,384
MR&T	92,618	46,889
FCCE	.....	800,000
Expenses	.....	.....
Regulatory	16	.....
FUSRAP	974	.....

Since the fiscal year 2006 appropriations were not enacted until last November, adjustments had to be made in the scheduling of funds during the Continuing Resolution. In addition, in fiscal year 2006 we received substantial hurricane-related supplemental appropriations. Therefore, the amount carried over from fiscal year 2006 may not be a good indicator of what to expect at the end of the following year.

Question. What changes to the requirements contained in the fiscal year 2006 act would you recommend to assist you in better use of the funds appropriated to the program?

Mr. WOODLEY. The fiscal year 2006 Energy and Water Appropriations Act includes language that has enabled the Corps to limit the use of continuing contracts and thereby increase the use of other kinds of contracts (such as fully-funded contracts and base bid-plus-options contracts) for projects authorized for construction. The fiscal year 2007 budget proposed to amend this language for fiscal year 2007 to enable the Corps to limit the use of continuing contracts and thereby expand the use of other kinds of contracting instruments for operation and maintenance activities as well.

Question. If these changes remain unchanged for several years, will you be able to award and carry out as many construction contracts as you have under the previous rules? Can you estimate or characterize the differences for us?

General STROCK. The fiscal year 2006 Energy and Water Appropriations Act has enabled the Corps to expand the use of contracting instruments other than continuing contracts in its construction program. The Corps recently issued guidance to ensure that the construction program is using continuing contracts only where they are the most appropriate contracting instrument. The fiscal year 2006 act did not, however, include a further reform proposed in the fiscal year 2006 budget, which would have provided the Corps with the kind of multi-year contracting authority used by other Federal agencies. In the absence of such authority, efforts to reduce reliance on continuing contracts could affect the number of awarded contracts during a transition period of up to a few years.

Question. The Corps has been awarding so-called continuing contracts for many years . . . since 1922, I'm told. This is where you award a contract that will take more than a year to execute and where you depend on appropriations in future years to fund the contract earnings expected in those future years.

General Strock, what is the Corps' experience with that type of contract? That is, have they presented great challenges or otherwise not served the Nation well in the years you've been using them?

General STROCK. Continuing contracts, like the multi-year contracts used by other Federal agencies, enable the Corps to incrementally fund work on any water resources project (studies, design, construction, or operation and maintenance) that the Congress has not fully funded up front. However, unlike the multi-year contracting authority of other Federal agencies, the continuing contract authority of the Corps has few constraints and allows the Corps to legally bind the Federal Government to pay future costs in advance of appropriations. The use of our continuing contract authority has resulted over the years in a large number of long-term contracts with high out-year funding commitments to one provider, and limited the ability of the Executive Branch and the Congress to set priorities in the civil works program. Obviously, there are other challenges as well, particularly when the contractor's earning rate is greater than anticipated and significant reprogramming from other projects is required.

Question. How do you plan to manage your contracting in light of the guidance on continuing contracts contained in the fiscal year 2006 act? That is, will you award fewer contracts? If so, how many fewer contracts in the current fiscal year would you expect to award than if you didn't have this guidance?

General STROCK. Generally, the Corps is issuing a continuing contract in the construction program only when other contracting options such as fully-funded contracts, incremental contracts, or other contracts are not appropriate, and only with reasonable assurance that the continuing contract will be funded in the out years. In the short-term, fewer contracts are being awarded. However, I cannot make a numerical projection of the difference. In the long-term, we would expect the number of contracts to be as much or more than in previous years, assuming the same overall funding level.

Question. What is the long-term impact on the number of projects you will have underway at any given point in time? That is, will you then be able to have fewer projects underway at any given time?

General STROCK. Because we are waiting for sufficient funds to fully fund some contracts, there will be a deferral of these contracts in the short-term. In the long-term, at any given out-year funding level, the number of projects underway at a given time would be the same.

CONTINUING CONTRACTS

Question. How many continuing contracts has the Corps awarded in fiscal year 2006 since fiscal year 2006 Energy and Water Development Appropriations Act was passed?

General STROCK. There have been a total of 12 continuing contracts awarded as of the end of the second quarter of fiscal year 2006.

Question. How many continuing contracts have you disapproved and why?

Mr. WOODLEY. There are three continuing contracts that have been disapproved and/or sent back for reevaluation, because either the proposal did not satisfy the criteria laid out in the Corps fiscal year 2006 program execution guidance, or the analysis of whether another contracting mechanism would be efficient and effective in the circumstances was inconclusive.

Question. What are your criteria for determining to award a continuing contract?

Mr. WOODLEY. The Corps uses several criteria. In accordance with the fiscal year 2006 Program Management EC, several questions must be answered during evaluation. These questions include whether the amounts available and that have been identified for reprogramming in fiscal year 2006 are sufficient to fully fund the contract, and, if the amount available in fiscal year 2006 is not sufficient to fully fund the contract, whether the scope and schedule of the contract are appropriate for the features of the project to be constructed. If the amount available is insufficient and the scope and schedule are appropriate, then different contracting vehicles are explored and analyzed. If other relevant contracting options are not appropriate, and delay of the contract to fiscal year 2007 or later would result in significant consequences, a continuing contract may be recommended. My office also assesses whether future appropriations to support the contract are likely, based on recent funding history, the fiscal year 2007 President's budget, and the House, Senate, and Conference Reports when available.

Question. Have the directions in the fiscal year 2006 Energy and Water Development Appropriations Act caused any difficulties for the Corps?

General STROCK. The new guidelines have encouraged improved discipline in the system, but they also have introduced some delays in part by requiring elevation to the Washington level of day-to-day operational decisions that previously were made in the district offices.

With respect to reprogramming, we face the challenge of transitioning our budgeting and execution practices to an environment with limited reprogramming, including the challenge of funding previously incurred payback commitments and the challenge of addressing pressing or emergency situations and situations with strong business cases.

With respect to contracting, the limited use of continuing contracts will result in the delay of some contracts during a transition period until funding and contracting decisions are aligned.

All told, these changes have not caused significant difficulties. Carryover will increase in the short-term. These changes have also provided an opportunity to look for ways to improve the overall performance of the civil works program.

REPROGRAMMING

Question. How many reprogrammings have been approved within the Corps authority?

General STROCK. Such reprogrammings are an ongoing process throughout the fiscal year and tend to become more frequent as the year goes on. However, the following snapshot at the end of the second quarter should give a reasonable estimate as to the rate of reprogrammings within the appropriation accounts:

—Investigations—6 gainers, 2 sources;
—Construction—13 gainers, 14 sources;
—O&M—7 gainers, 5 sources;
—MR&T—7 gainers, 5 sources.

Question. How many reprogrammings that require prior notification to Congress have been proposed and how many have been approved?

General STROCK. As of the date of the hearing, the Army recently has submitted ten requests for reprogramming to OMB. OMB has cleared two of them already and is reviewing the others.

Question. To what do you attribute the failure to approve proposed reprogrammings in a timely manner?

General STROCK. Few reprogrammings are proposed due to the difficulty in finding suitable sources. One type of suitable source would be one for which the funds are excess to the total needs of the source project due to savings, such as from a low bid or changed site conditions; however, such situations are relatively rare. In the past, another fairly reliable source was slipped earnings due to delayed awards; but the expectation was that the revoked funds would be restored when needed. The guidance in the fiscal year 2006 conference report that there be no expectation of such payback commitments has nearly eliminated sources with slippages.

Question. Have the directions regarding reprogramming in the fiscal year 2006 Energy and Water Development Appropriations Act caused any difficulties for the Corps and do you have any recommendations as to how the directions in the fiscal year 2006 Appropriations bill might be improved?

General STROCK. The new guidelines have encouraged improved discipline in the program. We face the challenge of transitioning our budgeting and execution practices to an environment with limited reprogramming, including the challenge of funding previously incurred payback commitments and the challenge of addressing pressing or emergency situations and situations with strong business cases.

The administration's proposals for fiscal year 2007 are reflected in proposed bill language in the Budget Appendix. We would like to move toward a system that retains the benefits of this discipline, but that returns day-to-day operational decisions to the district level, perhaps in combination with periodic reporting to the Appropriations Committees on actions taken the prior quarter, to give them the opportunity to assess whether the committee's guidance and the Corps' own policies have been followed.

QUESTIONS SUBMITTED BY SENATOR ARLEN SPECTER

HOPPER DREDGE MCFARLAND

Question. Significant and timely maintenance, repair and replacement of systems and equipment in the amount of $25 million have been accomplished onboard the McFarland in the past 10 years. These include:

—Complete replacement of riveted seams (both port and starboard sides) resulting in all welded steel hull with estimated hull life extension of an additional 25 years;
—Phased renewal of all 12 hopper door frames;
—Phased overhaul of all 12 hopper door operating gear;

—Replacement of Steering Gear Control System;
—New propeller shafts;
—Complete replacement of propulsion control system from pneumatic system control to electronic controls; and
—Phased overhaul of all engines and generator.

In its November 2005 report to Congress regarding the future operation and configuration of the Federal hopper dredge fleet, the Corps states that an additional $20 million in major overhaul and repair activities must be expended to keep the Hopper Dredge McFarland operational.

It is my understanding that a one-time expenditure of this magnitude would be required only if the decision were made to transition the McFarland to ready reserve status, and that the McFarland can continue to work without this $20 million overhaul.

On what grounds was the assertion made that the McFarland requires $20 million in overhaul and repair work?

General STROCK. The $20 million overhaul and repair would be needed in either case, whether the McFarland were to be placed in ready reserve or if it were to work a full schedule.

Question. What specific repairs in the amount of $20 million are needed to keep the McFarland operational?

General STROCK. The current engine room, with 11 engines, is not the optimal configuration, nor the safest means of powering the McFarland. The majority of the repair costs would be used to repower the dredge with modern low emission engines, reduce the number of engines, and substantially improve the efficiency of operating the McFarland. The current manner of controlling the drag arms on the dredge is also not the optimal manner in which to perform this operational activity on the McFarland. Costs were included in the estimate to reconfigure the dual drag tender stations into a modern central drag tender station, thus reducing the crew requirements and improving the operational efficiency of the dredge. Additional items include removal of all asbestos on the dredge for the safety of the crew and other improvements.

Question. Port stakeholders were not invited to be members of the Industry/Corps Hopper Dredge Management Group (ICHDMG), formed by the Corps and Dredging Contractors of America. The port and waterway stakeholders, and the customers they serve, are the ultimate end users of the any federally contracted dredging contracts.

Failure to adequately respond to emergency dredging requirements, and the increasing cost of dredging, ultimately affects the competitiveness of the Nation's ports and waterways transportation system.

General STROCK. The ICHDMG was formed in response to Section 237 of WRDA 96. The purpose of the ICHDMG is to maximize the effectiveness and efficiency of our Nation's hopper dredging resources, to enhance the viability and competitiveness of our ports and waterways by maintaining communication between the Corps and the hopper dredging industry and to ensure procedures are in place and sufficient hopper dredges are available to respond to urgent and emergency dredging while meeting needed routine dredging requirements. The ICHDMG is a working group that is focused on identifying hopper dredging problems and crafting solutions, sharing information, diffusing potential problems, and coordinating schedules on a national basis. In the past some of the shipping stakeholders and ports have participated in ICHDMG meetings. In addition, the Corps district offices work directly with the many ports throughout the Nation to ensure that these important stakeholders are fully engaged in all aspects of the Corps dredging program that affects their interests.

Question. Should port stakeholders be included in the ICHDMG to ensure their participation in the decision-making process regarding Federal hopper dredging?

General STROCK. Any interested port stakeholders would be most welcome to participate in ICHDMG.

QUESTION SUBMITTED BY SENATOR MARK DAYTON

POWDER RIVER BASIN EXPANSION PROJECT

Question. What steps is the Army Corps of Engineers taking to ensure that a complete and thorough review is conducted prior to issuing permits under Sec. 404 of the Clean Water Act and Sec. 10 of the Rivers and Harbors Act for the proposed construction of the Powder River Basin Expansion Project, also known as the Dakota, Minnesota & Eastern (DM&E) Railroad project?

General STROCK. The Omaha District began coordination (pre-application meeting) with the Dakota, Minnesota and Eastern (DM&E) Railroad relative to the Powder River Basin Expansion Project in November 6, 1997. The Omaha District participated as a cooperating agency under the National Environmental Policy Act (NEPA) with the Surface Transportation Board (STB) in the formulation of an Environmental Impact Statement to ensure that requirements of Section 404 of the Clean Water Act were addressed concurrently with the STB's review process.

The Omaha District received two Section 404 permit applications for the Wyoming and South Dakota portions September 15, 2000. A Section 10 permit application was submitted to the U.S. Coast Guard for a bridge replacement on the Missouri River at approximately the same time since that agency is responsible for that action.

The STB rendered a decision to authorize the project under its program responsibilities January 28, 2002 which was the subject of litigation (*Mid States Coalition for Progress* v. *STB*). The 8th Circuit Court of Appeals remanded the decision and required that additional study and analysis be completed in four specific areas of the EIS. A supplemental EIS was formulated, which the Omaha District participated in as a cooperating agency. The supplemental EIS was released January 6, 2006. The STB issued a new decision authorizing the project and is the subject of current litigation (*Mayo Foundation* v. *United States of America and STB*) in the 8th Circuit Court of Appeals.

The Omaha District has ensured that the information formulated in the EIS addresses our information and data needs. Omaha has also continued coordination with DM&E on the permit applications in an attempt to address outstanding information needs that were identified since December 4, 2001. Action on these applications since 2002 was minimal due to DM&E's focus on litigation and addressing direction from the court. A meeting with Omaha District staff in Cheyenne, Wyoming, is scheduled to address outstanding information needs and administrative processes to allow final permit decisions to be rendered.

SUBCOMMITTEE RECESS

Senator LANDRIEU. Thank you so much and the hearing is recessed.

[Whereupon, at 3:53 p.m., Wednesday, April 5, the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER, AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 2007

THURSDAY, APRIL 6, 2006

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 2:07 p.m., in room SD–192, Dirksen Senate Office Building, Hon. Pete V. Domenici (chairman) presiding.

Present: Senators Domenici and Allard.

DEPARTMENT OF ENERGY

NATIONAL NUCLEAR SECURITY ADMINISTRATION

STATEMENT OF HON. LINTON F. BROOKS, UNDER SECRETARY FOR NUCLEAR SECURITY, AND ADMINISTRATOR, NATIONAL NUCLEAR SECURITY ADMINISTRATION

ACCOMPANIED BY:

JERRY PAUL, PRINCIPAL DEPUTY ADMINISTRATOR, NUCLEAR NONPROLIFERATION ACTIVITIES

ADMIRAL KIRKLAND DONALD, DEPUTY ADMINISTRATOR FOR NAVAL REACTORS

THOMAS D'AGOSTINO, DEPUTY ADMINISTRATOR FOR DEFENSE PROGRAMS

STATEMENT OF SENATOR PETE V. DOMENICI

Senator DOMENICI. The hearing will please come to order. Today the subcommittee is going to hear testimony on the fiscal year 2007 budget request for the National Nuclear Security Administration. I would like to thank Ambassador Brooks for joining us here today and providing his testimony. The Ambassador is joined by Jerry Paul, the Principal Deputy Administrator for Nuclear Nonproliferation Activities—is that correct?—and Tom D'Agostino, Deputy Administrator for Defense Programs; and Admiral Kirkland Donald, Deputy Administrator for Naval Reactors. I appreciate everyone's participation and thank you for coming.

Ambassador Brooks will provide the testimony and his three deputies will be available to answer questions. I understand that is our format.

The President's request for NNSA for 2007 is $9.3 billion, up $211 million from last year's enacted level. Weapons programs. The funding for the weapons programs is $6.4 billion, up about $38 mil-

lion. In large measure, this budget supports the necessary investments in lab infrastructure. However, I am concerned with the declining trend in science-based stockpile stewardship activities, such as science, engineering, and inertial confinement fusion.

I could not be more disappointed in what the Department has proposed for inertial confinement fusion budget. The Department continues to put all their resources behind the NIF project at the expense of all the other stockpile activities. Funding for NIF research is up over $50 million while the other high energy density research has been cut by $115 million. The NIF-at-all-costs attitude is now undermining balancing the weapons stewardship research activities. Declining budgets for non-NIF-related science has put weapons physics research on Z and Omega clearly at risk.

Mr. Ambassador, I believe this strategy is not the right one and we are going to work hard to correct it here in the Senate energy and water bill and we hope the product that we finish with will meet your satisfaction. It will be different than that which you submitted to us.

On Monday, Tom D'Agostino briefed me, and I thank him for that, on NNSA's plan to implement the nuclear complex of the future. The Department has developed a plan to consolidate operations in fewer locations, which should reduce security costs and reduce the overall number of facilities that NNSA must maintain out in the future, perhaps to 2030. In addition, it supports the Reliable Replacement Warhead program and begins to catch up on the dismantlement of weapons no longer in the stockpile. That is good.

What I believe is missing from the plan is a decrease in the overall number of weapons systems in the NNSA that they are going to be expected to maintain. Under the plan the NNSA will continue to support the same eight systems plus the new RRW through 2030 if I understand it correctly. It seems to me that you have traded off facilities, science, and people in exchange for the same number of systems and responsibilities. I am not sure that I got that figured right, but it looks like it, and I am not sure that makes the best sense overall.

Why does this plan not contemplate reduction in existing systems, perhaps the elimination of one of them? Many experts wonder why we continue to maintain the W80. Maybe it is time to revisit the need for the life extension of that weapon. We will see.

Nuclear nonproliferation is the next issue, and the budget continues to receive strong support from the President. That is good news. Funding for the nuclear nonproliferation activities are up $111 million, for a total of $1.73 billion. Funding for MOX, the global threat reduction initiative, and the MPC&A all received increases. I think that is good news.

One notable exception is the funding cut for the nuclear detection R&D program. This activity supports research that gives our national security teams the technical advantage over terrorist countries that attempt to conceal their nuclear programs. We will ask about that, why that should have been reduced or eliminated.

In 1998 I worked very hard with a few others to provide $200 million to encourage the Russians to come to the negotiating table on plutonium disposition, 1998. The funding was in good faith and the offer to the Russians to demonstrate our sincerity and serious-

ness about nonproliferation. The Department of Energy and State, the Department of State, have secured $800 million from G–8 partners to construct the Russian MOX plant, a real achievement.

However, I understand the Russians have raised the stakes and are now demanding that the G–7 pay for the plant operations. I think we are correct in that. You have to talk about that, Mr. Ambassador. It is a matter of high, high importance. Unless we allow them to use the plutonium for their fast breeder reactor program, they insist that we are going to have to pay for plant operations. Now, I am concerned that these fact reactors could be turned into breeder reactors and will create additional plutonium, the very substance we are trying to eliminate.

We also continue to wait for the final approval of the Russians—that is, their full governmental, governance-making—on the liability deal negotiated last July. I feel that the opponents of MOX will use these delays as an excuse to cut funding for this project. The Russian delaying tactics have created a liability for the U.S. program in my opinion.

I believe we should de-link the construction projects and allow the U.S. efforts to go forward to create a disposal pathway for our weapons-grade plutonium. We must live up to our commitments of reducing our stockpile even if the Russians will not or if for some reason they think they must continue to delay this matter, as I have described it, or for other reasons.

In the mean time, we should continue to talk and try to work things out with the Russians, try to get an agreement prior to or during the G–8 meeting. That is up to our two great countries and that will take place this summer. But until we have final agreement that will guarantee the destruction of the 34 tons of Russian weapons-grade plutonium, the United States should not fund the Russian construction project and we must not provide any further design on the MOX plant for the Russians in my opinion.

My last observation has to do, Mr. Ambassador, with the cost of operations of LANL. In 2 months, Los Alamos National Security LLC will take over the M&O contract at Los Alamos from the University of California, which has operated the facility for 60 years. I am concerned about the increased costs of the new contract negotiated by NNSA. I am not saying I am concerned in the sense that this should not have happened, but I am concerned that the new contract provides significant increases in the fee, from roughly $8 million to $80 million, and it will require the lab to pay the gross receipts tax to the State of New Mexico of about $75 million. I think that is the estimate.

I suspect that there are operations—several other increases that add to the bottom line operations because of the new contract. I do not know that. Unfortunately, the Los Alamos lab budget does not reflect any increases to accommodate these added charges. All of these costs will come out of R&D, science, and operational accounts, putting further strain on an already tight budget.

I hope to get some answers from you, Mr. Ambassador, as to how these costs will be offset without having a negative impact on lab operations. I know the answer is going to be there will be savings made here and there and elsewhere. That may be the case, but clearly that is not going to go on forever, and we are going to have

some assurance that in the future we have got to make this up in ways other than to continue to assume it will come out of savings.

I will close now by saying how I remain impressed with the success of the naval reactor program. I save it for last because it is best and because it does not take very long to explain it, to just say that the Navy needs nuclear propulsion plants that are capable of responding to the challenges that we face and we believe this program accomplishes these goals. The 5-year plan includes a small but a steady increase in the naval reactors, which will prove beneficial in the coming months.

Now, I will ask if there are any others who want to make opening remarks. If there are any opening remarks that are needed to be put in the record, we will provide for that now without objection.

Now, having completed that, we will move to the witness. Mr. Ambassador, sorry I took so long, but I think you know how I feel on a few of these subjects now. So you may proceed as you see fit.

STATEMENT OF HON. LINTON F. BROOKS

Ambassador BROOKS. Thank you, sir. I have submitted a statement which I would like received for the record.

The President's budget supports three main missions: safe, secure, and reliable stockpile; reducing the nonproliferation threat; and providing reliable and safe nuclear propulsion systems for the Navy. Most of our programs are similar to previous years, are familiar to the committee, and are described in my written statement, so I want to limit my opening remarks to drawing your attention to a couple of points.

First, as you noted, sir, although the stockpile remains safe and reliable today, we must ensure reliability and safety over the long term and this means transforming the stockpile and the supporting infrastructure. Our approach to doing so depends heavily on the concept of a Reliable Replacement Warhead, taking advantage of our decision to relax cold war design constraints. We believe we will be able then to design replacement components that are easier to manufacture, safer, use environmentally more benign material, and increase performance margins.

I share your concern about the number of weapons systems. The Department of Defense and we are working together closely. The question is not: "Will we still be maintaining eight systems in 2030?" The answer is almost certainly no. The question is: "How far along do we have to go in this new effort before the military can have confidence that it can eliminate a weapons system?" Our assumption for the long-term future demands, frankly, that there would be reductions in the life extension programs. Otherwise the resources for modernizing the complex are going to be very difficult to find.

We have completed, as you know and as you have been briefed, an intensive effort to sustain and establish our vision for the future, and I am quite pleased with it. Our challenge has been to find a path that is both affordable and feasible, and lets us continue to support the near-term stockpile.

I want to make two other points about the weapons program. Last year the Congress reduced life extension programs and those reductions challenge our ability to meet DOD requirements. I am

especially concerned with the reduction to the W76 submarine-launched ballistic missile warhead and, assuming that it is retained, the W80 cruise missile warhead.

Also last year, the Congress significantly reduced funds for the facilities and infrastructure recapitalization program. That has made it impossible to meet the congressionally-mandated date of 2011 to terminate this program and the administration has submitted legislation to extend the effort 2 years. I hope that the Congress this year will support the President's request in both those areas.

Turning to nonproliferation, I would like to highlight three areas. First, we are on track to meet the various commitments agreed to between President Bush and President Putin at Bratislava in 2008. We will complete security upgrades in Russia by that date.

Second, we are requesting a significant funding increase to permanently shut down the three remaining weapons-grade plutonium production reactors in Russia and we are also proposing a significant increase for the global threat reduction initiative, which secures both fissionable and radioactive material.

Finally, as you noted, under the plutonium disposition program we expect to begin construction of the MOX fuel fabrication facility this fall, and approval of the entire administration request is in my judgment crucial because we will be seeking the peak funding construction year in 2007.

I would also like to turn to two points that you made in your opening statement and respond briefly to them and then we can respond further in questions. With respect to nonproliferation research and development, our request this year is almost identical to our request last year. Last year the Congress increased funding. We did not take that as intended to be direction to alter our long-term base, and so it is not a question of cutting that program. It is a question of assuming that that was a one-time increase.

Secondly, with regard to Los Alamos, I share your concern that we make sure that the American taxpayers and the program are not put at risk by the change we have made at Los Alamos. Over the next 7 years we could potentially spend almost half a billion dollars in fees at Los Alamos and I intend to get something for it.

First, 70 percent of that fee will be performance-based and we will not spend it unless the performance warrants it. Performance very much includes efficiencies and improvements that will free up resources. As you know, when the lab director decided to shut the facility down, you can argue about the bookkeeping, but we probably spent several hundred million dollars. If we can guarantee that never happens again, we will in fact have more money to go into the program.

I am also pleased that the new contractor has proposed a decreasing fee that starts at $70 million a year and drops in the seventh year to a maximum of $54 million. That is still a lot of money, but it is an indication that they believe that their task will be greatest in the early years.

Finally, as you noted, the naval reactors effort, which has always been a model for performance efficiency, is the final segment of our budget. Our request supports our No. 1 priority of ensuring safety

and reliability of 104 operating Navy nuclear propulsion plants and it also continues research on advanced technology.

PREPARED STATEMENT

Mr. Chairman, our budget request continues to transform the stockpile, continues to transform the infrastructure, continues to reduce the global danger from proliferation, and continues to enhance Navy force projection capabilities, and I urge the committee to support it.

With that, sir, I am ready for your questions.

[The statement follows:]

PREPARED STATEMENT OF HON. LINTON F. BROOKS

Thank you for the opportunity to discuss the President's fiscal year 2007 Budget Request for the National Nuclear Security Administration (NNSA). This is my fourth appearance before this committee as the Under Secretary for Nuclear Security, and I want to thank all of the members for their strong support for our important national security responsibilities.

OVERVIEW

In the sixth year of this administration, with the strong support of Congress, NNSA has achieved a level of stability that is required for accomplishing our long-term missions. Our fundamental responsibilities for the United States include three national security missions:

—assure the safety and reliability of the U.S. nuclear weapons stockpile while at the same time transforming that stockpile and the infrastructure that supports it;

—reduce the threat posed by nuclear proliferation; and

—provide reliable and safe nuclear reactor propulsion systems for the U.S. Navy.

The budget request for $9.3 billion, an increase of $211 million, supports these NNSA missions.

Weapons Activities

The NNSA is committed to ensuring the long-term reliability, safety and security of the Nation's nuclear deterrent. Stockpile Stewardship is working; the stockpile remains safe and reliable. This assessment is based not on nuclear tests, but on cutting-edge scientific and engineering experiments and analysis, including extensive laboratory and flight tests of warhead components and subsystems. Each year, we are gaining a more complete understanding of the complex physical processes underlying the performance of our aging nuclear stockpile. However, as we continue to draw down the stockpile to the levels established in the Treaty of Moscow—between 1,700 and 2,200 operationally deployed strategic nuclear weapons—we must consider the long-term implications of successive warhead refurbishments for the weapons remaining in the stockpile. Successive refurbishments will take us further from the tested configurations and it is becoming more difficult and costly to certify warhead remanufacture despite the extraordinary success of the Stockpile Stewardship Program.

If we were starting to build the stockpile from scratch today we would take a much different approach than we took during the Cold War. Most of today's warheads were designed to maximize explosive yield with minimum size and weight so that many warheads could be carried on a single delivery vehicle. As a result, weapons designers designed closer to the so-called "cliffs" in performance. If we were designing the stockpile today, we would manage risk differently, trading size and weight for increased performance margins and ease of manufacture and maintenance.

Second, the legacy stockpile was not designed for longevity. During the Cold War we introduced new weapons routinely, turning over most of the stockpile every 15–20 years. Today, our weapons are aging and now are being rebuilt in life extension programs that are both difficult and costly. Rebuilding nuclear weapons will never be cheap, but Cold War decisions to use certain hazardous materials mean that, in today's health and safety culture, warheads are much more costly to remanufacture.

Furthermore, we continue to evolve our deterrent posture from its Cold War origins to one that requires far fewer weapons. Decisions the President announced in 2004 will result, by 2012, in the smallest total stockpile since the Eisenhower Ad-

ministration. Even with these unprecedented reductions, however, the stockpile—especially the components we keep in reserve—is probably too large.

Finally, with regard to physical security, we must consider new technology to ensure these weapons can never be used by those who wish to harm us. During the Cold War the main security threat to our nuclear forces was from espionage. Today, that threat remains, but to it has been added a post-9/11 threat of well-armed and competent terrorist suicide teams seeking to gain access to a warhead or to special nuclear materials in order to cause a nuclear detonation in place. This change has dramatically increased security costs. If we were designing the stockpile today, we would apply new technologies and approaches to warhead design as a means to reduce physical security costs.

Fortunately, we know how to address all of these problems.

The administration's Nuclear Posture Review (NPR), completed in December 2001, called for a transition from a threat-based nuclear deterrent with large numbers of deployed and reserve weapons to a deterrent based on capabilities, with a smaller nuclear weapons stockpile and greater reliance on the capability and responsiveness of the Department of Defense (DOD) and NNSA infrastructure to respond to threats. Success in realizing this vision for transformation will enable us to achieve over the long term a smaller stockpile, one that is safer and more secure, one that offers a reduced likelihood that we will ever again need to conduct an underground nuclear test, and one that enables a much more responsive nuclear weapons infrastructure. Most importantly, this effort can go far to ensure a credible deterrent for the 21st century that will reduce the likelihood we will ever have to employ our nuclear capabilities in defense of the Nation—through demonstration of responsiveness in design and production, demonstration of confidence in our abilities, cleanup of portions of the Cold War legacy and demonstration of America's will to maintain nuclear preeminence. We have worked closely with the DOD to identify initial steps on the path to a responsive nuclear infrastructure.

What do we mean by "responsive nuclear weapons infrastructure?" By "responsive" we refer to the resilience of the nuclear enterprise to unanticipated events or emerging threats, and the ability to anticipate innovations by an adversary and to counter them before our deterrent is degraded. Unanticipated events could include complete failure of a deployed warhead type or the need to respond to new and emerging geopolitical threats. The elements of a responsive infrastructure include the people, the science and technology base, and the facilities and equipment to support a right-sized nuclear weapons enterprise. But more than that, it involves a transformation in engineering and production practices that will enable us to respond rapidly and flexibly to emerging needs. Specifically, a responsive infrastructure must provide capabilities, on appropriate timescales and in support of DOD requirements, to:

—Dismantle warheads;
—Ensure warheads are available to augment the operationally deployed force;
—Identify, understand, and fix stockpile problems;
—Design, develop, certify, and begin production of refurbished or replacement warheads;
—Maintain capability to design, develop, and begin production of new or adapted warheads, if required;
—Produce required quantities of warheads; and
—Sustain underground nuclear test readiness.

As we and the DOD take the first steps down this path, we clearly recognize that the "enabler" for transformation is our concept for the Reliable Replacement Warhead (RRW). The RRW would relax Cold War design constraints that maximized yield to weight ratios and thereby allow us to design replacement components that are easier to manufacture, are safer and more secure, eliminate environmentally dangerous materials, and increase design margins, thus ensuring long-term confidence in reliability and a correspondingly reduced chance we will ever need to resort to nuclear testing.

The combination of the RRW and a responsive infrastructure—each enabled by the other—may be genuinely transformational. The reduced stockpile the President approved in 2004 still retains a significant non-deployed nuclear stockpile as a hedge against technical problems or geopolitical changes. Once we demonstrate that we can produce warheads on a timescale in which geopolitical threats could emerge, we would no longer need to retain extra warheads to hedge against unexpected geopolitical changes.

In addition to the mission of continuously maintaining the safety, security, reliability and operational readiness of the Nation's nuclear deterrent, establishing the capabilities to achieve and sustain this transformation is a central focus of our activities. Transformation will, of course, take time. We are starting now with improv-

ing business and operating practices, both in the Federal workforce and across the nuclear weapons complex, and through restoring and modernizing key production capabilities. Full infrastructure changes, however, will take a couple of decades. But I believe by 2030 we can achieve a responsive infrastructure that will provide capabilities, if required, to produce weapons with different or modified military capabilities. As important, through the RRW program we will revitalize our weapons design community to meet the challenge of being able to adapt an existing weapon within 18 months and design, develop, and begin production of a new design within 3–4 years of a decision to enter engineering development—goals that were established in 2004.

As part of the transformation process we are also actively reviewing the recommendations of the Secretary of Energy Advisory Board Nuclear Weapons Complex Infrastructure Task Force to prepare a comprehensive plan for transforming the nuclear weapons complex. Many of the recommendations are consistent with initiatives that NNSA was already considering or is implementing (design of a Reliable Replacement Warhead, consolidation of Special Nuclear Materials, accelerating dismantlement of retired weapons, managing the evolving complex to enhance responsiveness and sustainability, and establishing an Office of Transformation). The analysis of this report and its recommendations is underway and should be completed and presented to the Congress by this spring.

Transformation presents some significant near term challenges, one of which is pit production. The NNSA considers an appropriate pit production capacity to be essential to its long-term evolution to a more responsive nuclear weapons infrastructure. We are disappointed, therefore, that Congress declined to fund planning for a modern pit production facility in fiscal year 2006. As a result, we did not seek funding for this facility in fiscal year 2007; although we remain convinced that increased pit production capacity is essential to our long-term evolution to a more responsive nuclear weapons infrastructure. In coming months, we will work with Congress to identify an agreed approach to fund long-term pit production capacity. In the meantime, we plan to increase the Los Alamos National Laboratory pit manufacturing capacity to 30–40 pits per year by the end of fiscal year 2012 in order to support the Reliable Replacement Warhead. This production rate, however, will be insufficient to meet our assessed long-term pit production needs.

Another challenge of transformation is maintaining the balance between Life Extension Programs (LEP) for the current stockpile and development of the RRW and new infrastructure. The warhead LEP is key to our meeting the Department of Defense's (DOD) mission needs today and during transformation. These programs deserve special attention and I am concerned that fiscal year 2006 Congressional reductions for two warhead LEPs have challenged our ability to meet our deterrence needs. A reduction in the W76 LEP request significantly increased the risk to achieving a first production unit by the end of fiscal year 2007. Reductions to the W80 LEP request have delayed deployment of first production units and delayed the introduction of important use control features to strengthen security. We hope that this committee renews its support for these critical LEPs.

Another significant near term challenge is ensuring the security of our people, our nuclear weapons, our weapons-usable materials, our information, and our infrastructure from harm, theft or compromise. The job has become more difficult and costly as a result of two factors: the increased post-9/11 threat to nuclear warheads and associated fissile materials coupled with the primacy of "denying access" to these key assets—a much more rigorous security standard than "containment" of the asset. We will meet the requirements of the 2003 Design Basis Threat (DBT) by the end of this fiscal year. We expect to be compliant with the 2005 DBT revisions at the two most sensitive locations, the Secure Transportation Asset and the Pantex Weapons Plant by the end of fiscal year 2008 as required by Departmental policy.

The world in 2030 will not be more predictable than it is today, but this vision of our future nuclear weapons posture is enabled by what we have learned from 10 years of experience with science-based Stockpile Stewardship, from planning for and carrying out life extension programs for our legacy stockpile, and from coming to grips with national security needs of the 21st century as laid out in the NPR. A world of a successful responsive infrastructure isn't the only plausible future of course. But it is one we should strive for. It offers the best hope of achieving the President's vision of the smallest stockpile consistent with our Nation's security. That's why we are embracing this vision of stockpile and infrastructure transformation. We should not underestimate the challenge of transforming the enterprise, but it is clearly the right path for us to take.

Defense Nuclear Nonproliferation

Let me now turn to our nuclear nonproliferation and threat reduction programs. Acquisition of nuclear weapons, WMD capabilities, technologies, and expertise by rogue states or terrorists poses a grave threat to the United States and international security. The pursuit of nuclear weapons by terrorists and states of concern makes it clear that our threat detection programs are urgently required must be successful and must proceed on an accelerated basis. The NNSA budget request addresses this urgency and demonstrates the President's commitment to prevent, contain, and roll back the proliferation of nuclear weapons-usable materials, technology, and expertise.

Our programs are structured around a comprehensive and multi-layered approach to threat reduction and nuclear nonproliferation. We work with more than 70 countries to secure dangerous nuclear and radioactive materials, halt the production of fissile material, detect the illegal trafficking or diversion of nuclear material, and ultimately dispose of surplus weapons-usable materials. We also work with multilateral institutions including the International Atomic Energy Agency and the Nuclear Suppliers Group to strengthen nuclear safeguards and improve the nuclear export control regulatory infrastructure in other countries. This multi-layered approach is intended to identify and address potential vulnerabilities within the international nonproliferation regime, reduce the incentive for terrorists and rogue states to obtain WMD, and limit terrorists' access to deadly weapons and materials.

A significant amount of our work falls at the intersection of nonproliferation and peaceful use of nuclear materials. The United States is setting an example by making a firm commitment to reducing its nuclear arsenal and recycling substantial quantities of weapons-usable highly enriched uranium for peaceful, civilian, energy-generating purposes. In 1994, the United States declared 174 tons of highly enriched uranium (HEU) to be in excess of our national security needs. The great bulk of that material is now in the process of being down blended for use in civilian nuclear power reactors. Last year, we announced that 17.4 MT of this material will be down blended and set aside to establish a fuel bank in support of our efforts to develop an international reliable fuel supply mechanism, an issue I will return to later in my statement.

In addition, in May of 2004, President Bush announced plans to reduce our Nation's nuclear weapons stockpile by nearly half, to its smallest size since the Eisenhower Administration. This decision enables us to begin to dispose of a significant amount of weapons-grade nuclear material. Last year, the administration committed to remove an additional 200 metric tons of HEU—enough material for approximately 8,000 nuclear warheads—from any further use as fissile material in U.S. nuclear weapons This represents the largest amount of special nuclear material ever removed from the stockpile in the history of the U.S. nuclear weapons program. The bulk of this material will be retained for use in propulsion systems for our Nation's nuclear navy—a step that will allow us to postpone the need to construct a new uranium high-enrichment facility for at least 50 years. Twenty metric tons of this HEU will be down blended to LEU for use in civilian nuclear power reactors or research reactors.

We are also working with the Russian Federation to eliminate 34 metric tons of weapons-usable plutonium in each country that will be converted into MOX fuel and burned in nuclear power reactors. We believe we have now resolved the impasse over liability that has long delayed the plutonium disposition program and the construction of the MOX plant at our Savannah River site.

Much of our work focuses on emerging issues such as detecting clandestine nuclear supply networks, monitoring efforts by more countries to acquire nuclear weapons, and preventing the spread of nuclear fuel cycle technology. We have taken a number of steps to shut down illicit supply networks and keep nuclear materials out of the hands of terrorists as reflected in U.S. leadership in support of the Proliferation Security Initiative, Security Council Resolution 1540, criminalizing proliferation, and in strengthening international export control regimes.

We have worked to expand our programs designed to stop nuclear smuggling and nuclear terrorism by cooperatively developing and employing radiological and nuclear detection equipment at key border crossings, airports, and major seaports, or "megaports," worldwide. NNSA also assists and trains customs officials at home and abroad to detect the illicit trafficking of nuclear and radiological materials, as well as dual-use commodities that might be useful in weapons of mass destruction programs. We are also expanding our efforts to secure and transform global inventories of weapons-usable materials. Our programs include the Global Threat Reduction Initiative to reduce and secure fissile and radioactive material worldwide; our International Material Protection and Cooperation program, also known as "MPC&A", which has accelerated efforts to improve the security of weapons usable material in

Russia and elsewhere; and our efforts to complete the conversion of research reactors throughout the world to the use of low enriched uranium within the next decade. There are also two complementary programs that address the repatriation of fresh and spent HEU material from Russian-supplied research reactors and U.S.-origin material from research reactors around the world.

Cooperation with Russia on nonproliferation is nothing new for the United States, but this cooperation has been heightened following the rise of global terrorism and the events of September 11, 2001. The Joint Statement on Nuclear Security Cooperation issued by Presidents Bush and Putin at their Bratislava meeting last year is but one example of the significant progress we have made over the last 5 years. This joint statement has helped expedite our cooperative work with Russia. For example, as a result of the Bush-Putin Bratislava joint statement, we were able to make the return of fresh and spent HEU fuel from U.S.- and Russian-design research reactors in third countries a top priority, as well as a plan for joint work to develop low-enriched uranium fuel for use in these reactors. As a result, we were able complete the conversion of a Russian-supplied research reactor located in the Czech Republic to low-enriched fuel and to airlift a significant amount of HEU from the Czech Technical University reactor located near Prague for safe and secure storage in Russia. We have also made significant progress on the other Bratislava joint statement items, and we expect this cooperation and success will continue.

Beyond the threat of nuclear terrorism, illicit networks engaging in nuclear trade, and additional states seeking nuclear weapons capability, the nonproliferation community also faces another significant challenge—revitalizing nuclear energy throughout the globe in a manner that also advances our nonproliferation interests. We have the opportunity to reshape our collective approach to ensure that nonproliferation is the cornerstone of the next evolution of civilian nuclear power and fuel cycle technology. The challenge before us is to make sure we design—from the very beginning—technologies and political arrangements that limit the spread of sensitive fuel cycle capabilities and ensure that rogue states do not use a civilian nuclear power as cover for a covert nuclear weapons program.

Last month, the administration announced the Global Nuclear Energy Partnership, or GNEP, as part of President Bush's Advanced Energy Initiative. GNEP is a comprehensive strategy to enable an expansion of nuclear power in the United States and around the world, to promote nuclear nonproliferation goals; and to help resolve nuclear waste disposal issues. Fundamental to GNEP is a new approach to fuel cycle technology. Under this proposed new approach, countries with secure, advanced nuclear fuel cycle capabilities would offer commercially competitive and reliable access to nuclear fuel services—fresh fuel and recovery of used fuel—to other countries in exchange for their commitment to forgo the development of enrichment and recycling technology.

Over the next year, we will work with other elements of the Department to establish GNEP, paying special attention to developing advanced safeguards and developing the parameters for international cooperation. Since the signing of the Nuclear Non-Proliferation Treaty, the world has sought to prevent the proliferation of nuclear weapons while expanding the benefits of nuclear technology. I believe that GNEP takes us closer to that goal. By allowing us to move beyond abstract discussions to tangible actions that will benefit directly those who join us in this partnership. GNEP will offer us the opportunity to take the international lead in making nonproliferation an integral part of our global nuclear safety and security culture.

Naval Reactors

Also contributing to the Department's national security mission is the Department's Naval Reactors Program, whose mission is to provide the U.S. Navy with safe, militarily effective nuclear propulsion plants and ensure their continued safe, reliable and long-lived operation. Nuclear propulsion enhances our warship capabilities by providing the ability to sprint where needed and arrive on station; ready to conduct sustained combat operations when America's interests are threatened. Nuclear propulsion plays a vital role in ensuring the Navy's forward presence and its ability to project power anywhere in the world.

The Naval Reactors Program has a broad mandate, maintaining responsibility for nuclear propulsion from cradle to grave. Over 40 percent of the Navy's major combatants are nuclear-powered, including aircraft carriers, attack submarines, and strategic submarines, which provide the Nation's most survivable deterrent.

FISCAL YEAR 2007 BUDGET REQUEST BY PROGRAM

The President's fiscal year 2007 budget request totals $9.3 billion, an increase of $211 million or 2.3 percent. We are managing our program activities within a disciplined 5-year budget and planning envelope. We are doing it successfully enough

to be able to address the administration's high priority initiatives to reduce global nuclear danger in Defense Nuclear Nonproliferation, and provide for needed funding increases in some of our programs within an overall modest growth rate.

Weapons Activities

The fiscal year 2007 budget request for the programs funded within the Weapons Activities appropriation is $6.41 billion, less than a 1 percent increase over fiscal year 2006. This request supports the requirements of the Stockpile Stewardship Program consistent with the administration's Nuclear Posture Review (NPR) and the revised stockpile plan submitted to the Congress in June 2004. Our request places a high priority on accomplishing the near-term workload and supporting technologies for the stockpile along with the long-term science and technology investments to ensure the design and production capability and capacity to support ongoing missions. This request also supports the facilities and infrastructure that must be responsive to new or emerging threats.

Directed Stockpile Work (DSW) is an area of special emphasis this year with a fiscal year 2007 request of $1.41 billion, a 3 percent increase over fiscal year 2006. In fiscal year 2007, we will be accelerating efforts for dismantlement of retired warheads and consolidation of special nuclear materials across the nuclear weapons complex. Both of these efforts will contribute to increasing the overall security at NNSA sites. DSW also supports routine maintenance and repair of the stockpile; refurbishes warheads through the Life Extension Programs; and, maintains the capability to design, manufacture, and certify new warheads, for the foreseeable future. DSW also supports managing the strategy, driving the change, and performing the crosscutting initiatives required to achieve responsiveness objectives envisioned in the NPR. Our focus remains on the stockpile, to ensure that the nuclear warheads and bombs in the U.S. nuclear weapons stockpile are safe, secure, and reliable.

Progress in other parts of the Stockpile Stewardship Program continues. The fiscal year 2007 request for the six Campaigns is $1.94 billion, a 9 percent decrease from fiscal year 2006. The Campaigns focus on scientific and technical efforts and capabilities essential for assessment, certification, maintenance, and life extension of the stockpile and have allowed NNSA to move to "science-based" stewardship. These campaigns are evidence of NNSA excellence and innovation in science, engineering and computing that, though focused on the nuclear weapons mission, have much broader application.

Specifically, $425 million for the Science and Engineering Campaigns provides the basic scientific understanding and the technologies required to support the workload and the completion of new scientific and experimental facilities. We will continue to maintain the ability to conduct underground nuclear tests at the Nevada Test Site if required, but let me be clear, nothing at this time indicates the need for resumption for underground testing for the foreseeable future.

The Readiness Campaign, with a request of $206 million, develops and delivers design-to-manufacture capabilities to meet the evolving and urgent needs of the stockpile and supports the transformation of the nuclear weapons complex into an agile and more responsive enterprise.

The request of $618 million for the Advanced Simulation and Computing Campaign supports the schedule to enhance the computational tools and technologies necessary to support the continued assessment and certification of the refurbished weapons, aging weapons components, and a Reliable Replacement Warhead program without underground nuclear tests. As we enhance these tools to link the historical test base of more than 1,000 nuclear tests to computer simulations, we can continue to assess whether the stockpile is safe, secure, reliable, and performs as required.

The $451 million request for the Inertial Confinement Fusion Ignition and High Yield Campaign is focused on the execution of the first ignition experiment at the National Ignition Facility (NIF) in 2010 and provides facilities and capabilities for high-energy-density physics experiments in support of the Stockpile Stewardship Program. To achieve the ignition milestone, $255 million will support construction of NIF and the NIF Demonstration Program and $168 million will support the National Ignition Campaign. The ability of NIF to assess the thermonuclear burn regime in nuclear weapons via ignition experiments is of particular importance. NIF will be the only facility capable of probing in the laboratory the extreme conditions of density and temperature found in exploding nuclear weapons.

The Pit Manufacturing and Certification Campaign request of $238 million continues work to manufacture and certify the W88 pit in 2007 and to address issues associated with manufacturing future pit types including the Reliable Replacement Warhead and increasing pit production capacity at Los Alamos National Laboratory.

Readiness in Technical Base and Facilities (RTBF) and Facilities and Infrastructure Recapitalization Program (FIRP)

In fiscal year 2007 we are requesting $1.98 billion for the maintenance and operation of existing facilities, remediation and disposition of excess facilities, and construction of new facilities. This is of critical importance to enable NNSA to move toward a more supportable and responsive infrastructure.

Of this amount, $1.69 billion is requested for Readiness in Technical Base and Facilities (RTBF), an increase of 3 percent from fiscal year 2006, with $1.4 billion in Operations and Maintenance and $281 million for RTBF Construction. RTBF operates and maintains current facilities, and ensure the long-term vitality of the NNSA complex through a multi-year program of infrastructure construction.

This request also includes $291 million for the Facilities and Infrastructure Recapitalization Program (FIRP), a separate and distinct program that is complementary to the ongoing RTBF efforts. The FIRP mission is to restore, rebuild and revitalize the physical infrastructure of the nuclear weapons complex. FIRP works in partnership with RTBF to assure that facilities and infrastructure are restored to an appropriate condition to support the mission, and to institutionalize responsible and accountable facility management practices. FIRP activities include reducing deferred maintenance, recapitalizing the infrastructure, and reducing the maintenance base by eliminating excess real property. The FIRP Recapitalization projects are key to restoring the facilities that house the people, equipment, and material necessary to the Stockpile Stewardship Program, the primary NNSA mission. FIRP Facility Disposition activities reduce Environment, Safety and Health (ES&H) and safeguards and security liabilities, address footprint reduction of the complex, and reduce long-term costs and risks. The primary objective of FIRP Infrastructure Planning is to ensure that projects are adequately planned in advance of project start.

Last year the Congress significantly reduced funds for the FIRP program. This reduction, coming on reductions in planned levels dictated by fiscal constraints, means that the original (and Congressionally mandated) goal of eliminating the maintenance backlog and terminating the FIRP program by 2011 is no longer attainable. This matter may require legislation extending the FIRP program to 2013. We remain committed to the concept of FIRP as a temporary, "get well" program and to the long term, sustained funding of maintenance within the RTBF program.

Secure Transportation Asset

In fiscal year 2007, the budget requests $209 million for Secure Transportation Asset (STA), a minor decrease from fiscal year 2006 levels, for meeting the Department's transportation requirements for nuclear weapons, components, and special nuclear materials shipments. The workload requirements for this program will escalate significantly in the future to support the dismantlement and maintenance schedule for the nuclear weapons stockpile and the Secretarial initiative to consolidate the storage of nuclear material. The challenge to increase secure transport capacity is coupled with and impacted by increasingly complex national security concerns. To support the escalating workload while maintaining the safety and security of shipments, STA is increasing the cumulative number of Safeguard Transporters in operation by three per year, with a target total of 51 in fiscal year 2011.

Environmental Projects and Operations

We are requesting $17.2 million for Environmental Projects and Operations. The $17.2 million request is for a new function, Long Term Response Actions/Long-Term Stewardship, which covers continuing environmental stewardship at NNSA sites after the completion of Environmental Management activities. This new program at each site begins when EM cleanup activities are completed, and will continue for several years. Activities comprise routine inspections of landfill covers/caps, and maintenance of pump and treatment systems, and starting in fiscal year 2007, will be performed at three NNSA sites: Lawrence Livermore National Laboratory, Kansas City Plant, and Sandia national laboratories.

The fiscal year 2007–2011 Budget Request does not include the transfer of legacy environmental management activities at NNSA sites that was proposed in the fiscal year 2006 Budget Request. However, the responsibility for newly generated waste at the Lawrence Livermore National Laboratory and the Y–12 National Security Complex was transferred to the NNSA in fiscal year 2006, and is managed in the Readiness in Technical Base and Facilities GPRA unit.

Nuclear Weapons Incident Response

The fiscal year 2007 request for Nuclear Weapons Incident Response is $135 million, an increase of 15 percent over fiscal year 2006. The NNSA Emergency Operations remains the U.S. Government's primary capability for radiological and nu-

clear emergency response in support of Homeland Security. The program is continuing efforts to enhance Emergency Response capabilities, and the budget request supports all assets as planned, with emphasis on recruitment and training of personnel called into action during emergency situations. The fiscal year 2007 increase is primarily associated with the research and development efforts of the Render Safe Research and Development program. This budget realigns this research and development funding to Emergency Response where the program is managed.

Safeguards and Security

The fiscal year 2007 request for Safeguards and Security is $754 million. This budget supports two security-related activities. The budget request proposes that the physical security portion of NNSA's Safeguards and Security GPRA Unit be renamed "Defense Nuclear Security", consistent with the responsible NNSA organization. This program is responding to a revision in threat guidance affecting physical security at all NNSA sites. Meeting the Design Basis Threat will require further upgrades to equipment, personnel and facilities, and NNSA is committed to completing these activities. The Cyber Security program activities, managed by the NNSA Chief Information Officer, comprise the rest of this account, and the fiscal year 2007 request is essentially level with the fiscal year 2006 funding level. The Request includes funding for the DOE Diskless Conversion initiative. Meeting the post-9/11 security requirements has required a significant long-term investment, reflecting DOE's continuing commitment to meet these requirements.

Defense Nuclear Nonproliferation

The Defense Nuclear Nonproliferation program goal is to detect, prevent, and reverse the proliferation of Weapons of Mass Destruction (WMD) while mitigating nuclear risk worldwide. Our programs address the danger that hostile nations or terrorist groups may acquire weapons of mass destruction or weapons-usable material, dual-use production or technology, or WMD capabilities. Our primary focus in this regard is securing or disposing of vulnerable stockpiles of weapon-usable materials, technology, and expertise in Russia and other countries of concern. The administration's request of $1.73 billion to support NNSA activities to reduce the global weapons of mass destruction proliferation threat represents almost a 7 percent increase over the budget for comparable fiscal year 2006 activities.

The administration's fiscal year 2007 Fissile Material Disposition budget request is $638 million, an increase of $169 million over fiscal year 2006. This increase reflects the progress in implementing the plutonium disposition program in the past year. Of this amount, $551 million will be allocated toward disposing of surplus U.S. and Russian plutonium and $87 million will be allocated toward the disposition of surplus U.S. highly enriched uranium. The plutonium disposition program, the Department's largest nonproliferation program, plans to dispose of 68 metric tons (MT) of surplus Russian and U.S. weapons-grade plutonium by fabricating it into mixed oxide (MOX) fuel for use in civilian nuclear power-generating reactors. The United States and Russia successfully completed negotiations of a liability protocol for the program, and senior Russian government officials have assured the United States that this protocol will be signed in the near future. DOE has also been working to validate the U.S. MOX project cost and schedule baseline as part of our project management process, and we will have a validated baseline in place before construction begins. DOE received authorization to begin construction of the MOX facility from the Nuclear Regulatory Commission, began site preparation work for the MOX facility at the Savannah River Site, and implemented a number of improvements to strengthen the management of the MOX project. Current plans call for construction of the U.S. MOX facility to start in 2006, with operations to start in 2015. The administration's budget request is essential for continuing this work in fiscal year 2007, which will be a peak construction year. Now that the liability issue is nearing resolution, high-level U.S.-Russian discussions are taking place to confirm the technical and financial details for the Russian construction program.

The administration's fiscal year 2007 budget request of $107 million for the Global Threat Reduction Initiative (GTRI) is a 10 percent increase over fiscal year 2006 and supports the urgency carried in ambitious completion dates and objectives set by the program. GTRI represents the Department's latest effort to identify, secure, recover, and/or facilitate the disposition of the vulnerable nuclear and radioactive materials worldwide that pose a threat to the United States and the international community. Since the creation of GTRI, we have enjoyed a number of successes. Under our radiological threat reduction program, we have completed security upgrades at more than 340 facilities around the world. As a result of the Bush-Putin Bratislava joint statement on enhanced nuclear security cooperation, we have established a prioritized schedule for the repatriation of U.S.-origin and Russian-origin

research reactor nuclear fuel located in third countries. As part of our nuclear materials threat reduction efforts under GTRI, three successful shipments in fiscal year 2005 to repatriate Russian-origin fresh highly enriched uranium (HEU) from the Czech Republic (two shipments) and Latvia.

In accordance with the President's Bratislava commitment, we have also begun working with the Russian Federation to repatriate Russian-origin spent fuel. We have also conducted several successful shipments to repatriate U.S.-origin spent nuclear fuel from Japan, the Netherlands, Sweden, Greece, and Austria. We have converted three research reactors in the Netherlands, Libya, and the Czech Republic from the use of HEU to the use of low-enriched uranium (LEU) fuel so far in 2006, and we have completed physical security upgrades at three priority sites housing dangerous materials in Ukraine, Kazakhstan, and Uzbekistan.

The International Material Protection and Cooperation fiscal year 2007 budget request of $413 million is a 2 percent decrease from fiscal year 2006. For more than a decade, the United States has worked cooperatively with the Russian Federation and other former Soviet republics to secure nuclear weapons and weapons material that may be at risk of theft or diversion. As part of the Bush-Putin Bratislava joint statement, we agreed to accelerate security upgrades at Russian sites holding weapons-usable materials and warheads. The Bratislava joint statement also provided for a comprehensive joint action plan for cooperation on security upgrades of Russian nuclear facilities at Rosatom and Ministry of Defense sites. In addition, this statement called for enhanced cooperation in the areas of nuclear regulatory development, sustainability, secure transportation, MPC&A expertise training, and protective force equipment. A number of major milestones for this cooperative program are on the horizon, and the fiscal year 2007 budget ensures that sufficient funding will be available to meet these milestones. Security upgrades for Russian Rosatom facilities will be completed by the end of 2008—2 years ahead of schedule. By the end of 2008 we will also complete cooperative upgrades at the nuclear warhead storage sites of the Russian Strategic Rocket Forces and the Russian Ministry of Defense sites. By the end of fiscal year 2007, we will have provided security upgrades at more than 80 percent of all the nuclear sites in Russia at which we now plan cooperative work.

The administration's budget request will enable us to expand and accelerate the deployment of radiation detection systems at key transit points within Russia and accelerate installation of such equipment in five other priority countries to prevent attempts to smuggle nuclear or radiological materials across land borders. Through our Megaports initiative, we plan to deploy radiation detection capabilities at three additional major seaports in fiscal year 2007 to pre-screen cargo containers destined for the United States for nuclear and radiological materials, thereby increasing the number of completed ports to 13.

The fiscal year 2007 budget request of $207 million for the Elimination of Weapons Grade Plutonium Production (EWGPP) is an increase of 18 percent from fiscal year 2006. The EWGPP program is working toward complete the permanent shut down of the three remaining weapons grade plutonium production reactors in Russia at Seversk and Zheleznogorsk. Every week, these reactors currently produce enough fissile material for several nuclear weapons. The overall EWGPP plan is to shutdown these reactors permanently and replace the heat and electricity these reactors supply to local communities with energy generated by fossil fuel plants by December 2008 in Seversk and December 2010 in Zheleznogorsk. The reactors will shut down immediately when the fossil plants are completed. The first validated estimate of total program cost—$1.2 billion—was determined in January 2004. After extensive negotiations with Russia, we achieved $200 million in cost savings. Also, under the authority to accept international funding as provided in the Ronald W. Reagan Defense Authorization Act for fiscal year 2005, we have received pledges of $30 million from six Global Partnership participants. Construction of the fossil fuel plant at Seversk started in late 2004, and the start of construction of the fossil fuel plant at Zheleznogorsk was recently approved. The increased funding as part of the fiscal year 2007 budget request allows for both construction projects to remain on schedule and thereby hold the line on cost.

The fiscal year 2007 budget requests $269 million for Nonproliferation and Verification Research and Development. This effort includes a number of programs that make unique contributions to national security by researching the technological advancements necessary to detect and prevent the illicit diversion of nuclear materials. The Proliferation Detection program advances basic and applied technologies for the nonproliferation community with dual-use benefit to national counter-proliferation and counter-terrorism missions. Specifically, this program develops the tools, technologies, techniques, and expertise for the identification, location, and analysis of the facilities, materials, and processes of undeclared and proliferant

WMD programs. The Proliferation Detection program conducts fundamental research in fields such as radiation detection, providing support to the Department of Homeland Security (DHS) and the Intelligence Community. The Nuclear Explosion Monitoring program builds the Nation's operational sensors that monitor from space the entire planet to detect and report surface, atmospheric, or space nuclear detonations. This program also produces and updates the regional geophysical data sets enabling operation of the Nation's ground-based seismic monitoring networks to detect and report underground detonations.

The fiscal year 2007 budget request for Nonproliferation and International Security is $127 million. This figure cannot be directly compared to fiscal year 2006 because of a budget structure change that has realigned the Global Initiatives for Proliferation Prevention and HEU Transparency programs to this GPRA unit. Through this program the Department provides technical and policy expertise in support of U.S. efforts to strengthen international nonproliferation institutions and arrangements, fosters implementation of nonproliferation requirements through engagement with foreign partners, and helps develop the mechanisms necessary for transparent and verifiable nuclear reductions worldwide. This budget request addresses our need to tackle key policy challenges including efforts to strengthen the IAEA safeguards system, attempts to block and reverse proliferation in Iran and North Korea, attention to augmenting U.S. cooperation with China, India, and Russia, and our plan to build-up the nonproliferation component of the Global Nuclear Energy Partnership.

Naval Reactors

The Naval Reactors fiscal year 2007 budget request of $795 million is an increase of $13.5 million from fiscal year 2006. The Program's development work ensures that nuclear propulsion technology provides options for maintaining and upgrading current capabilities, as well as for meeting future threats to U.S. security.

The majority of funding supports the Program's No. 1 priority of ensuring the safety and reliability of the 104 operating naval nuclear propulsion plants. This work involves continual testing, analysis, and monitoring of plant and core performance, which becomes more critical as the reactor plants age. The nature of this business demands a careful, measured approach to developing and verifying nuclear technology; designing needed components, systems, and processes; and implementing them in existing and future plant designs. Most of this work is accomplished at Naval Reactors' DOE laboratories. These laboratories have made significant advancements in extending core lifetime, developing robust materials and components, and creating an array of predictive capabilities.

Long-term Program goals have been to increase core energy, to achieve life-of-the-ship cores, and to eliminate the need to refuel nuclear powered ships. Efforts associated with this objective have resulted in planned core lives that are sufficient for the 30-plus year submarine (based on past usage rates) and an extended core life planned for CVN 21 (the next generation aircraft carrier). The need for nuclear propulsion will only increase over time as the uncertainty of conventional fuel cost and availability grows.

Naval Reactors' Operations and Maintenance budget request is categorized into six areas: Reactor Technology and Analysis; Plant Technology; Materials Development and Verification; Evaluation and Servicing; Advanced Test Reactor (ATR) Operations and Test Support; and Facility Operations.

The $212 million requested for Reactor Technology and Analysis will support continued work on the design for the new reactor plant for the next generation of aircraft carriers, CVN–21. These efforts also support the design of the Transformational Technology Core (TTC), a new high-energy core that is a direct outgrowth of the Program's advanced reactor technology and materials development and verification work.

Reactor Technology and Analysis also develops and improves the analysis tools, which can be used to safely extend service life beyond our previous experience base. The increasing average age of our Navy's existing reactor plants, along with future extended service lives, a higher pace of operation and reduced maintenance periods, place a greater emphasis on our work in thermal-hydraulics, structural mechanics, fluid mechanics, and vibration analysis. These factors, along with longer-life cores, mean that for years to come, these reactors will be operating beyond our previously proven experience base.

The $131 million requested for Plant Technology provides funding to develop, test, and analyze components and systems that transfer, convert, control, and measure reactor power in a ship's power plant. Reactor plant performance, reliability, and safety are maintained through a full understanding of component performance and system condition over the life of each ship. Naval Reactors is developing components

to address known limitations and to improve reliability of instrumentation and power distribution equipment to replace aging, technologically obsolete equipment. Additional technology development in the areas of chemistry, energy conversion, instrumentation and control, plant arrangement, and component design will continue to support the Navy's operational requirements.

The $118 million requested for Materials Development and Verification funds material analyses and testing to provide the high-performance materials necessary to ensure that naval nuclear propulsion plants meet Navy goals for extended warship operation and greater power capability. More explicitly, materials in the reactor core and reactor plant must perform safely and reliably for the extended life of the ship.

The $179 million requested for Evaluation and Servicing sustains the operation, maintenance, and servicing of Naval Reactors' operating prototype reactor plants. Reactor core and reactor plant materials, components, and systems in these plants provide important research and development data and experience under actual operating conditions. These data aid in predicting and subsequently preventing problems that could develop in Fleet reactors. With proper maintenance, upgrades, and servicing, the two prototype plants will continue to meet testing needs for at least the next decade.

Evaluation and Servicing funds also support the implementation of a dry spent fuel storage production line that will put naval spent fuel currently stored in water pits at the Idaho Nuclear Technology and Engineering Center and at the Expended Core Facility (ECF) on the Naval Reactors facility in Idaho into dry storage. Additionally, these funds support ongoing decontamination and decommissioning of inactive nuclear facilities at all Naval Reactors sites to address their "cradle to grave" stewardship responsibility for these legacies, and minimize the potential for any environmental releases.

The $64.6 million requested for Advanced Test Reactor Operations and Test Support sustains the ongoing activities of the INL ATR facility, owned and operated by the Office of Nuclear Energy (NE), Science, and Technology.

In addition to the budget request for the important technical work discussed above, program direction and facilities funding is required for continued support of the Program's operations and infrastructure. The $57 million requested for facilities operations will maintain and modernize the Program's facilities, including the Bettis and Knolls laboratories as well as ECF and Kesselring Site Operations (KSO), through capital equipment purchases and general plant projects. The $2.8 million requested for construction funds will be used to complete construction of a materials development facility and to support the design of a materials research technology complex. Finally, the $31.2 million requested for program direction will support Naval Reactors' DOE personnel at Headquarters and the Program's field offices, including salaries, benefits, travel, and other expenses.

Office of the Administrator

The fiscal year 2007 budget request of $387 million, and increase of 14.2 percent over the fiscal year 2006 appropriation. NNSA completed the reengineering of its Federal workforce last year and has begun to recruit to fill critical skill gaps in safety, security, facilities, and business positions, in addition to the Future Leaders Intern program initiated in fiscal year 2005. The fiscal year 2007 request increases to provide additional personnel and support for mission growth in the Defense Nuclear Nonproliferation area, as well as in safety and security functions. The remainder of the increase reflects functional transfers to NNSA of 18 people from other Departmental elements, and fact of life changes including pay adjustments, increased space and occupancy charges, and cost of living increases in pay and benefits. We plan to support a slightly higher workforce level than in previous years, reflecting support for mission growth areas and skill gap closures.

Historically Black Colleges and Universities Support

A research and education partnership program with the Historically Black Colleges and Universities (HBCU) and the Massie Chairs of Excellence was initiated by the Congress in the Office of the Administrator appropriation in fiscal year 2005 and fiscal year 2006. NNSA has established an effective program to target national security research opportunities for these institutions to increase their participation in national security-related research and to train and recruit HBCU graduates for employment within NNSA. The NNSA's goal is a stable $10 million effort annually. The majority of the efforts directly support program activities, and it is expected that programs funded by the Weapons Activities, Defense Nuclear Nonproliferation and Naval Reactors appropriations will fund research with the HBCUs in areas including engineering, radiochemistry, material and computational sciences and sen-

sor development. A targeted effort in education and curriculum development, and support for the Massie Chairs, will also be continued.

MANAGEMENT ISSUES

NNSA has fully embraced the President's Management Agenda through the completion of the NNSA re-engineering initiative by creating a more robust and effective NNSA organization. Additionally, NNSA's success has been recognized with consistently "Green" ratings from the DOE, including Budget and Performance Integration. NNSA's Planning, Programming, Budgeting and Evaluation (PPBE) process was implemented simultaneously with the standup of the new NNSA organization, and is now the established management construct that integrates management, financial data and performance information in a multi-year context.

The PPBE process is in its fifth year of implementation, and provides a fully integrated, multi-year perspective. The linkages within NNSA mirror the Headquarters and field organization structures, and are supported by management processes, contracting, funds control and accounting documentation. The cascade and linkages are quite evident in our updated NNSA Strategic Plan, issued last November.

We take very seriously the responsibility to manage the resources of the American people effectively and I am glad that our management efforts are achieving such results.

Finally, to provide more effective supervision of high-hazard nuclear operations, I have established a Chief, Defense Nuclear Safety position and appointed an experienced safety professional to the position. I believe this will help us balance the need for consistent standards with my stress on the authority and responsibility of the local Site Managers.

CONCLUSION

In conclusion, I am confident that we are headed in the right direction. Our budget request will support continuing our progress in protecting and certifying our nuclear deterrent, transforming our stockpile and infrastructure, reducing the global danger from proliferation and weapons of mass destruction, and enhancing the force projection capabilities of the U.S. nuclear Navy. It will enable us to continue to maintain the safety and security of our people, information, materials, and infrastructure. Above all, it will meet the national security needs of the United States of in the 21st century.

Mr. Chairman, this concludes my statement. A statistical appendix follows that contains the budget figures supporting our request. My colleagues and I would be pleased to answer any questions on the justification for the requested budget.

NATIONAL NUCLEAR SECURITY ADMINISTRATION: APPROPRIATION AND PROGRAM SUMMARY TABLES, OUT-YEAR APPROPRIATION SUMMARY TABLES

FISCAL YEAR 2007 BUDGET TABLES

NATIONAL NUCLEAR SECURITY ADMINISTRATION APPROPRIATION AND PROGRAM SUMMARY

[In millions of dollars]

	Fiscal Year 2005 Current Appropriations	Fiscal Year 2006 Original Appropriation	Fiscal Year 2006 Adjustments	Fiscal Year 2006 Current Appropriation	Fiscal Year 2007 Request
National Nuclear Security Administration (NNSA):					
Office of the Administrator	363.4	341.9	−3.4	338.5	386.6
Weapons Activities (after S&S WFO offset)	6,625.5	6,433.9	−64.3	6,369.6	6,407.9
Defense Nuclear Nonproliferation	1,508.0	1,631.2	−16.3	1,614.8	1,726.2
Naval Reactors	801.4	789.5	−7.9	781.6	795.1
Total, NNSA	9,298.3	9,196.5	−92.0	9,104.5	9,315.8

Note.—The fiscal year 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, Public Law 109–148.

The NNSA budget justification contains information for 5 years as required by Sec. 3253 of Public Law 106–065. This section, entitled Future-Years Nuclear Security Program (FYNSP), requires the Administrator to submit to Congress each year the estimated expenditures necessary to support the programs, projects and activi-

ties of the NNSA for a 5-year fiscal period, in a level of detail comparable to that contained in the budget.

OUT-YEAR APPROPRIATION SUMMARY NNSA FUTURE-YEARS NUCLEAR SECURITY PROGRAM (FYNSP)

[In millions of dollars]

	Fiscal Year 2007	Fiscal Year 2008	Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011
NNSA:					
Office of the Administrator	387	394	402	410	418
Weapons Activities (after S&S offset)	6,408	6,536	6,667	6,800	6,936
Defense Nuclear Nonproliferation	1,726	1,761	1,796	1,832	1,869
Naval Reactors	795	811	827	844	861
Total, NNSA	9,316	9,502	9,692	9,886	10,084

WEAPONS ACTIVITIES FUNDING PROFILE BY SUBPROGRAM

[In thousands of dollars]

	Fiscal Year 2005 Current Appropriation	Fiscal Year 2006 Original Appropriation	Fiscal Year 2006 Adjustments	Fiscal Year 2006 Current Appropriation	Fiscal Year 2007 Request
Weapons Activities:					
Directed Stockpile Work	1,351,206	1,386,189	−13,862	1,372,327	1,410,268
Science Campaign	277,253	279,464	−2,794	276,670	263,762
Engineering Campaign	258,767	250,411	−2,504	247,907	160,919
Inertial Confinement Fusion Ignition and High Yield Campaign	536,756	549,073	−5,491	543,582	451,191
Advanced Simulation and Computing Campaign	698,196	605,830	−6,058	599,772	617,955
Pit Manufacturing and Certification Campaign	263,570	241,074	−2,411	238,663	237,598
Readiness Campaign	265,472	218,755	−2,188	216,567	205,965
Readiness in Technical Base and Facilities	1,657,712	1,647,885	−3,130	1,644,755	1,685,772
Secure Transportation Asset	199,709	212,100	−2,121	209,979	209,264
Nuclear Weapons Incident Response	98,427	118,796	−1,188	117,608	135,354
Facilities and Infrastructure Recapitalization Program	313,722	150,873	−1,508	149,365	291,218
Environmental Projects and Operations	.....	.....	.....	.....	17,211
Safeguards and Security	751,929	805,486	−7,735	797,751	754,412
Subtotal, Weapons Activities	6,672,719	6,465,936	−50,990	6,414,946	6,440,889
Use of Prior Year Balances	−16,372	.....	−13,349	−13,349	.....
Security Charge for Reimbursable Work	−30,000	−32,000	.....	−32,000	−33,000
Transfer to the Office of the Administrator for Pajarito	−3,205	.....	.....	.....	.....
Undistributed Budget Authority[1]	2,400	.....	.....	.....	.....
Total, Weapons Activities	6,625,542	6,433,936	−64,339	6,369,597	6,407,889

[1] Results from application of the 0.8 percent across-the-board rescission against the gross Weapons Activities appropriation prior to receipt of the $300,000,000 which was derived by transfer from the Department of Defense in accordance with Public Law 108–447.

Note.—The fiscal year 2006 adjustments column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, Public Law 109–148. It also reflects the approval of the following reprogrammings for Readiness in Technical Base and Facilities using prior year funding—Savannah River General Plant Projects and Project 03–D–102, National Security Sciences Building.

Public Law Authorization.—Public Law 109–163, National Defense Authorization Act, fiscal year 2006; Public Law 109–103, Energy and Water Development Appropriations Act, 2006.

OUT-YEAR FUNDING PROFILE BY SUBPROGRAM

[In thousands of dollars]

	Fiscal Year 2008	Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011
Weapons Activities:				
Directed Stockpile Work	1,381,893	1,431,364	1,462,287	1,494,962
Science Campaign	282,223	281,344	274,296	268,441
Engineering Campaign	169,012	152,114	149,639	147,584
Inertial Confinement Fusion Ignition and High Yield Campaign	426,035	415,222	414,823	400,013
Advanced Simulation and Computing Campaign	632,095	621,943	607,746	593,761
Pit Manufacturing and Certification Campaign	249,588	252,174	260,096	255,832
Readiness Campaign	202,636	198,090	192,401	187,659
Readiness in Technical Base and Facilities	1,767,586	1,833,813	1,907,510	2,008,941
Secure Transportation Asset	225,057	237,344	244,212	247,580
Nuclear Weapons Incident Response	137,766	140,019	142,332	144,701
Facilities and Infrastructure Recapitalization Program	310,369	339,257	368,054	396,996
Environmental Projects and Operations	17,518	17,805	18,099	18,400
Safeguards and Security	768,269	781,279	794,608	808,235
Subtotal, Weapons Activities	6,570,047	6,701,768	6,836,103	6,973,105
Security Charge for Reimbursable Work	–34,000	–35,000	–36,000	–37,000
Total, Weapons Activities	6,536,047	6,666,768	6,800,103	6,936,105

MAJOR OUT-YEAR CONSIDERATIONS

[In thousands of dollars]

	Fiscal Year 2008	Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011
Weapons Activities	6,570,047	6,701,768	6,836,103	6,973,105

DEFENSE NUCLEAR NONPROLIFERATION FUNDING PROFILE BY SUBPROGRAM

[In thousands of dollars]

	Fiscal Year 2005 Current Appropriation	Fiscal Year 2006 Original Appropriation	Fiscal Year 2006 Adjustments [1]	Fiscal Year 2006 Current Appropriation	Fiscal Year 2007 Request
Defense Nuclear Nonproliferation and Verification:					
Nonproliferation Research and Development	219,836	322,000	−3,220	318,780	268,887
Nonproliferation and International Security	143,764	75,000	−750	74,250	127,411
International Nuclear Materials Protection and Cooperation	403,451	427,000	−4,270	422,730	413,182
Global Initiatives for Proliferation Prevention	40,675	40,000	−400	39,600	.....
HEU Transparency Implementation [1]	20,784	19,483	−195	19,288	.....
Elimination of Weapons-Grade Plutonium Production	67,331	176,185	−1,762	174,423	206,654
Fissile Materials Disposition	619,060	473,508	−4,735	468,773	637,956
Offsite Recovery Project	7,540	.....	.....	.....	.....
Global Threat Reduction Initiative	.....	97,975	−980	96,995	106,818
Subtotal, Defense Nuclear Nonproliferation	1,522,441	1,631,151	−16,312	1,614,839	1,760,908
Use of Prior Year Balances	−14,475	.....	.....	.....	−34,695
Total, Defense Nuclear Nonproliferation	1,507,966	1,631,151	−16,312	1,614,839	1,726,213

[1] This budget request includes an across-the-board rescission of 1 percent for fiscal year 2006 in accordance with the Department of Defense Appropriations Act 2006, Public Law 109–148.

Note.—The fiscal year 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, Public Law 109–148.
Public Law Authorization.—Public Law 108–148, The Consolidated Appropriations Act, 2006.

OUT-YEAR FUNDING PROFILE BY SUBPROGRAM

[In thousands of dollars]

	Fiscal Year 2008	Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011
Defense Nuclear Nonproliferation:				
Nonproliferation and Verification Research and Development	279,439	293,924	311,551	324,034
Nonproliferation and International Security	132,458	134,706	138,835	146,990
International Nuclear Materials Protection and Cooperation	403,351	444,405	530,723	542,859
Elimination of Weapons Grade Plutonium Production	182,017	139,363	24,949	.....
Fissile Materials Disposition	642,853	654,469	710,178	737,976
Global Threat Reduction Initiative	120,619	129,085	115,635	116,649
Total, Defense Nuclear Nonproliferation	1,760,737	1,795,952	1,831,871	1,868,508

MAJOR OUT-YEAR CONSIDERATIONS

[In thousands of dollars]

	Fiscal Year 2008	Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011
Defense Nuclear Nonproliferation	1,760,737	1,795,952	1,831,871	1,868,508

NNSA describes major out-year considerations at each GPRA-Unit level within this appropriation.

NAVAL REACTORS FUNDING PROFILE BY SUBPROGRAM

[In thousands of dollars]

	Fiscal Year 2005 Current Appropriation	Fiscal Year 2006 Original Appropriation	Fiscal Year 2006 Adjustments	Fiscal Year 2006 Current Appropriation	Fiscal Year 2007 Request
Naval Reactors Development (NRD):					
Operations and Maintenance	765,041	728,800	−7,288	721,512	761,176
Program Direction	29,264	30,300	−303	29,997	31,185
Construction [1]	7,132	30,400	−304	30,096	2,772
Subtotal, Naval Reactors Development	801,437	789,500	−7,895	781,605	795,133
Use of Prior Year Balances	.....	.....	.....	.....	.....
Total, Naval Reactors	801,437	789,500	−7,895	781,605	795,133

[1] In the Conference report to Public Law 109–103, Congress directed that NR transfer $13.5 million to DOE-NE to support the Advanced Test Reactor (ATR) Life Extension Program (LEP). However, the report included the $13.5 million specified for ATR under the Construction Heading Vice Operations and Maintenance. The additional $13.5 million has been transferred to NE to support the LEP (NR total transfer to NE for ATR in fiscal year 2006 was $70.8 million). Actual NR Construction requirements in fiscal year 2006 are $16.9 million.

Note.—The fiscal year 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, Public Law 109–148.

Public Law Authorization.—Public Law 83–703, ''Atomic Energy Act of 1954''; Executive Order 12344 (42 U.S.C. 7158), ''Naval Nuclear Propulsion Program''; Public Law 107–107, ''National Defense Authorization Act of 2002'', Title 32, ''National Nuclear Security Administration''; Public Law 108–375, National Defense Authorization Act, Fiscal Year 2005; Public Law 108–447, The Consolidated Appropriations Act, 2005; Public Law 109–163, National Defense Authorization Act, 2006.

OUT-YEAR FUNDING SCHEDULE

[In thousands of dollars]

	Fiscal Year 2008	Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011
Naval Reactors	811,036	827,257	843,802	860,678

MAJOR OUT-YEAR CONSIDERATIONS

[In thousands of dollars]

	Fiscal Year 2008	Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011
Naval Reactors:				
Operations and Maintenance	765,186	777,407	780,702	804,078
Program Direction	32,700	33,900	35,100	35,900
Construction	13,150	15,950	28,000	20,700
Total, Naval Reactors	811,036	827,257	843,802	860,678

NNSA describes major out-year considerations at each GPRA-Unit level within this appropriation.

PLUTONIUM DISPOSITION

Senator DOMENICI. Thank you very much.

Could we talk first about MOX?

Ambassador BROOKS. Yes, sir.

Senator DOMENICI. First, I am surprised by the lack of detail in your statement regarding MOX. Your statement makes no mention of the fact that the Department is rebaselining the entire program and that cost estimates have increased to over $3 billion. It makes no mention of the steps the Department is taking to respond to the DOE IG report, which found that we lack sufficient contractor oversight, which has contributed to the increased costs.

It also fails to mention that the Russians have made it clear that they will no longer pay for the operations of MOX if they are limited to using the fuel in light water reactors, in the same manner as the United States. Apparently the Russians have made a unilateral decision that their only interest is in fast reactors.

Finally, I am becoming increasingly frustrated that the Russians continue to stall the final approval of the liability agreement. I believe the Russians are now the biggest liability facing the program and we should sever the link between the construction projects.

So I have questions since your statement fails to mention any of these issues. Could you update the committee on them and what are you doing to improve the contract oversight and to rein in the contractor?

Ambassador BROOKS. Certainly, sir. Let me start with the Russian program first. Every Russian official at every level continues to assure us that the holdup in giving final approval to the liability agreement is entirely procedural. I share your frustration. I will note, however, that the Russian bureaucracy is legendary for taking a long time to do even simple things. So the information we have as recently as 2 weeks ago is an assurance from very senior Russians that there is no issue.

Second, the Russians have made it clear that they will dispose of plutonium in light water reactors as we had envisioned if the entire cost is borne by the international community. The Russians have interpreted the 2000 agreement as suggesting that. I believe the United States does not interpret it that way. In any event, the State Department and the Russians and I believe that we are unlikely to raise all of the operating money from the international community. Therefore, to preserve our options to go in both direc-

tions we are working with the Russians on disposing of some fuel in an existing fast reactor called the BN–600.

The BN–600 was envisioned in 2000 as one method for disposition and it is not a new idea. It is new that it is seen as the primary approach. Part of this effort would be to remove the blanket that makes it a breeder and to do that in a way that is verifiable to the United States.

I share your view that it would be lunacy to use surplus plutonium in order to make more plutonium and I do not believe the Russians have any interest in that and we would certainly not agree to it.

That would then allow a potential path forward. The BN–600 cannot eliminate all the 34 tons of MOX in any reasonable time. It would simply prove the technology and allow a Russian-planned reactor called the BN–800, not yet built, to be a path for disposition.

We intend to work with the Russians to continue to ensure that they live up to their end of the agreement. At the same time, I no longer believe that holding up U.S. construction is in our interest. I believe that because of the need to meet our own obligations and the relationship between a credible disposition path and material consolidation, that construction should go forward in South Carolina.

With regard to the Government Accountability Office and the cost increase, there are three reasons for the cost increase. One reason is that the initial figures we gave the Congress in 2002 were in constant 2001 dollars and we are now looking at out-year dollars.

The second reason is that the initial figures we gave the Congress were based on an erroneous, as it turns out, belief that we would have an optimal funding profile and that has not proved feasible. As a result, our strategy now is to fund at a constant rate. So it is probable that the 2008 request will be very similar to the 2007 request. That is more efficient from the standpoint of orderly budgeting. It is less efficient from the standpoint of construction, so there is an increase.

Then, as you correctly noted, we have had some management problems. Some of them have been caused by the protracted delay. Some of them have been caused by reductions, understandable reductions, based on the Russian delay. We are renegotiating the contract with DCS, the contractor. We decided to renegotiate rather than to recompete because I believe it is important to get on with it. We will have a 100 percent incentive fee. We will have stronger accountability and we will have new contractor management, and I believe that these steps will in fact give us greater assurance. I do not want to overpromise, Mr. Chairman. The Department's record on large-scale construction projects is not one of the things to be hugely proud of. But I believe that we are now on top of this and that we will be able to go forward in a responsible manner.

Senator DOMENICI. Maybe this is not a question for you, but let us just talk about this anyway. Why are we doing these things we are doing for the Russians? We started this program, these programs—the first of the kind was Nunn-Lugar. It took 3, 4, 5 years for it to get operating. It is about 20 years old. At that point we

had lots of potential proliferation around and the Russians had no money and things were really going to hell in a handbag.

It was hard at first for Americans to get the idea that we ought to give them help, but we did, and we got into this in a big way. We got three major programs that we call nonproliferation in the world and almost all of the money goes to something that is Russian, including the safeguard program. That is still going in, is it not, where we make sure things are guarded properly?

Ambassador BROOKS. Yes, sir. Yes, sir.

Senator DOMENICI. That is American money to safeguard things over there.

Ambassador BROOKS. Yes, sir.

Senator DOMENICI. The reason I say I do not know if it is for you to answer, but why do we still do these things for Russia? Why do they not do it themselves?

Ambassador BROOKS. Well, increasingly they are, sir, and I agree.

Senator DOMENICI. Wait a minute. You agree with what?

Ambassador BROOKS. I agree with what I take to be your view, that it is increasing for them to bear the burden of doing their own efforts.

We support improving security in Russian nuclear material for the same reason we did when you and others started it, because we believe that it is the way you protect the United States.

Senator DOMENICI. Absolutely.

Ambassador BROOKS. The best way to keep nuclear material out of the hands of those who would do us harm is at the source.

At the same time, we are coming to the end of that phase and President Bush and President Putin have explicitly stated at Bratislava they want to see us move from assistance to partnership. We are going to finish our work in improving Russian security in 2008. In fact, the Russians have already picked up a substantial—some of the sites that when I sat before you last year I expected we would be doing, the Russians are now going to be doing.

We are shifting our effort to much more of a collaborative understanding of sharing best practices, of working on how we make sure that they sustain this effort. So I think that, although perhaps less rapidly than you might like, we are moving away from sending money there.

Senator DOMENICI. Well, I appreciate your answer, and I have not been back to Russia since we started this a long time ago. It was all different people and a completely different government, so I do not know how they feel or what they think about this dialogue here today.

But this whole business of MOX and plutonium disposition and the 34 tons that we made a deal on, made an agreement on, it is incredible to me that they are ready to pay for all of this. It has taken us so long to get something done that it would appear to me this is in their benefit as much as ours or more. And we are having so much trouble getting it done.

That is why I am pleased to hear you say that we ought to—you did not use my language of "de-link" because that is too strong a word, but you indicated we should proceed——

Ambassador BROOKS. Yes, sir.

Senator DOMENICI [continuing]. If I heard you right.

Ambassador BROOKS. Yes, sir, you did hear it right.

Senator DOMENICI. You can rest assured that in the appropriations process to the extent that we can have anything to do with that, that is what we are going to say. It is a long way, we've been waiting long enough. America has a rare chance to make a breakthrough with MOX that we waited 25 years to do and should have done, and we just as well get on with it.

I think the State that has agreed it has some empathy, deserves some empathy, too. They cannot sit around forever and wait either. Maybe others do not understand that, but we do. It is a tough program.

Ambassador BROOKS. Thank you, sir.

Senator DOMENICI. So we understand each other on MOX, and on plutonium disposition what I have described is what we are going to do, and you can decide as the legislation moves through what the administration's position is going to be.

Ambassador BROOKS. Yes, sir.

NATIONAL IGNITION FACILITY

Senator DOMENICI. All right. The NIF budget. Does the fiscal year 2007 budget support the administration's goal of ignition by 2010?

Ambassador BROOKS. Yes, sir, it does.

Senator DOMENICI. Do you agree with the JASON's report on the NIF ignition plan, that it was fair and an accurate estimate of the NIF program?

Ambassador BROOKS. It was, and what it said was that they agree that we will be able to conduct the ignition experiment in 2010. They are less confident whether the first experiment will work, and we share this view. This is something that has never been done before. But we were pleased to see the JASON's report support the basic notion that the program is on track to conduct an ignition experiment in 2010. We intend to keep it on track.

Senator DOMENICI. Well, they say that—the JASON report, which you believe to be an accurate report, stated that 2010 ignition was "unrealistic." If this top-caliber review believes this goal is unrealistic, then why should we support a budget request that makes deep cuts in all these other programs to support this program that says it is unrealistic to expect the 2010 ignition?

Ambassador BROOKS. Respectfully sir, what they said was that it was realistic to assume that we could meet our goal to conduct the experiment in 2010, that it was not clear—if you say they used the word "unrealistic," I accept that; I do not remember it when I read the report—that it was not clear whether the first experiment would succeed.

I will say it is unrealistic to assume that the first time you try anything that has never been done before that you can guarantee it is going to work. I do not want to suggest that I am promising the committee that we will achieve ignition on the first try. I believe that we will conduct an experiment in 2010. I believe we have a chance that it will work. But they call it research because we have not done it yet.

So I do think that the decisions we have made are sound, although I think that we will try to start shifting some resources as we get through this peak period in the NIF, I think we will try to shift some resources back to using some of the other tools in inertial confinement fusion. For example, the Z refurbishment project will be complete in fiscal 2007, and I think that we did in fact reduce the amount of money that went into some of the other valuable areas like Z and Omega.

Senator DOMENICI. Well, the people at NIF know where this Senator stands and I stand by watching and waiting and hoping that it works. It is one of the biggest gambles I have ever voted for and, looking back on it, while I take great pride in saying I really love big science, that is one I would like to go back and see whether my arms would fit around it again. I am not quite sure they would.

But, having said that, I see another Senator here and I have lots of questions, but he does not have as many as me, nor as much time. Would you have questions at this point?

STATEMENT OF SENATOR WAYNE ALLARD

Senator ALLARD. Well, I do, Mr. Chairman, and thank you. Thank you for holding this hearing today. I do have a full statement I would like to make a part of the record if I might.

Senator DOMENICI. It will be made a part of the record.

[The statement follows:]

PREPARED STATEMENT OF SENATOR WAYNE ALLARD

Thank you Mr. Chairman for the opportunity to attend this hearing today.

Ambassador Brooks, it is a pleasure to see you again. I enjoyed our meeting a couple of weeks and appreciate your taking the time to stop by. I want you to know that I support you and the rest of Department. I look forward to working with you this year.

Mr. Chairman, I believe the Bush Administration has received far too little credit for its efforts to reduce proliferation and reduce the threat of a nuclear conflict. Many folks still have not recognized that the Treaty on Strategic Offensive Reductions (Moscow Treaty) will reduce the size of the U.S. stockpile to a level that has not been seen in 50 years. Indeed, we are pulling weapons out of the stockpile so fast that the Department of Energy had to double its fiscal year 2007 budget request for dismantlement of nuclear weapons.

And, the administration hasn't stopped there. Under your leadership, Ambassador Brooks, we are moving forward with the reliable replacement warhead program, which could further reduce the number of weapons in our stockpile. I think those who oppose this program have not really looked at it closely.

Their opposition to the RRW program does not make sense when the only alternative is the costly refurbishment process. Their opposition certainly does not make sense if, as promised, this program results in significantly greater reductions in our stockpile.

I firmly believe that nuclear weapons remain a critical element of our national security and are a significant deterrent to potential adversaries. The threat has not gone away and is unlikely to do so in the distant future. I think we can be much smarter and much more efficient in how we approach the stockpile without losing the effectiveness that we require. Programs like the reliable replacement warhead are a right step in this direction.

Thank you Mr. Chairman for the opportunity to speak today. I look forward to the Ambassador Brook's testimony.

CHANGES IN THE NUCLEAR WEAPONS COMPLEX

Senator ALLARD. I have a news release here where Mr. D'Agostino prepared a statement, I guess yesterday to the House, laying out the future of the nuclear weapons complex. I am won-

dering if maybe you might go into—as you know, I am interested in that.

Ambassador BROOKS. Yes, sir.

Senator ALLARD. And I wonder if you might go into a little more detail than what I am seeing here.

Ambassador BROOKS. Certainly, sir.

Senator DOMENICI. I see he is here. Whoever wants to do it.

Ambassador BROOKS. Well, let me.

Senator ALLARD. Okay. Well, we can have—whatever, just so I get an answer.

Ambassador BROOKS. Let me try.

Senator DOMENICI. Sure.

Ambassador BROOKS. We have pretty much all the knowledge we have got in this room, so we can tell you where we are going.

We have for the last couple of years been looking at the question of the complex of the future. We had an external look done by the Secretary of Energy Advisory Board, and we received the report late last year. That external look recommended moving very quickly to a single site for everything that involves uranium and plutonium at a location yet to be determined and it made a number of other recommendations, many of which we have adopted.

Our approach to the future of the complex has a number of parts. First, we intend to continue to emphasize the development of the Reliable Replacement Warhead because if we can simplify the ability to maintain and improve warheads then any complex can be made more efficient. So we see that as good in itself, but also as an enabler for the improved complex.

Second, we believe that one of our weaknesses today which we do not need to wait for the future is that the complex does not function in an integrated manner. Deputy Administrator D'Agostino has already put out guidance to make our incentive package for each of the sites based in part on the ability of the whole complex to meet its requirements.

Third, we think that we should dramatically reduce the number of places where we do plutonium and uranium work, both for efficiency, but in order to reduce the cost of security. For uranium, we believe that the investments we are making and have planned at Y–12 make it the long-term uranium, highly enriched uranium center for the United States. We are building a facility called the Highly Enriched Uranium Materials Facility, which will be the storage facility, the Fort Knox of uranium, if you wish, and we will be working with the Congress in coming years to build a facility next to it where all the uranium processing work is done.

Putting these two facilities next to each other will do two things. It will dramatically reduce the number of buildings that actually have material in it and it will dramatically shrink the area that we have to guard and protect.

With regard to plutonium, we believe that we should consolidate by the early 2020's essentially all plutonium work, both in making pits and in doing research on plutonium, at a single facility. Until that facility exists, the capability at Los Alamos will provide the interim capability.

We believe that the long-term future of the weapons labs—and we do not know where that plutonium facility should go, but our

general view is it should go at an existing site that uses category I and category II material. We do not think it is particularly worth the physical and political cost of moving plutonium to places where it has never been.

As a result, we intend to over time eliminate having special nuclear material at the three weapons laboratories. Sandia, which has the Sandia Pulse Reactor, has the primary material. We will finish the last series of experiments on that reactor later this year and we will be in a position to make Sandia special nuclear material-free.

We expect to begin moving material out of Livermore in 2008. I would like to be a little fuzzy right now about where we are going to put it, but we are going to begin moving it and intend to have Livermore free of special nuclear material by 2012. One precursor to that is obviously we want both Los Alamos and Livermore to continue to have intellectual involvement in plutonium metallurgy, which is so crucial to the stockpile, and we are going to have to work arrangements so that can be done from a single consolidated site.

Ultimately, if Los Alamos does not become the site of the new plutonium center, we would much later move out of Los Alamos. We intend to create a new non-nuclear production facility by 2012. Our facility in Kansas City is one of our best-run and best-managed facilities, but it is still operated as a government-owned, contractor-operated facility. It still has 3 million square feet of floor space and the United States does not need that, and we intend to move toward a different kind of facility. We still believe that there are things that need to be made under direct contract to us, that not all non-nuclear components can you simply go out and procure. But we want to move to more commercial procurement where that is appropriate.

We intend to make it clear to the Congress and the American people and the world that this is not the start of some new arms race, by accelerating the rate at which we dismantle weapons. Between 2006 and 2007, we will have a 50 percent increase in dismantlement and we are still looking at what we can do in the out-years.

Finally, we intend to look with regard primarily to the laboratory complex. We believe that we should retain the three existing laboratories. We believe that we should work more diligently than we have to look at the one of a kind facilities as user facilities that truly support the entire complex. We also think that over time the more complex high explosive experiments should be centralized in Nevada.

Then finally we have recently, inspired, to be candid, by some outside looks, we have concluded that any kind of complex—we have gotten too risk-averse. We have emphasized fourth decimal point analyses of safety over the expense of getting things done. So we are in the process of a series of internal looks to make sure that, whatever the complex of the future is, it will be operated more efficiently.

So that is the broad approach. There are a number of things in this budget that will contribute to that approach, but we will obviously be working with the Congress in the coming years, most par-

ticularly as we start the process of making site selection for this consolidated plutonium center.

NUCLEAR MATERIALS

Senator ALLARD. You are thinking the disposal site would be at Yucca Mountain in Nevada?

Ambassador BROOKS. I am assuming that at the moment. The complex makes—we make two assumptions. One is that, with regard to plutonium disposition, that it will leave the weapons system, if you will, through Savannah River. In terms of high-level disposal, that is not our formal responsibility, but we are obviously assuming that Yucca is where—for example, I believe that almost certainly we will continue to decide we have too much plutonium and I believe that we will turn more and more of it into MOX fuel and that will go in commercial reactors, and the output of that is just like the output of any other commercial reactor. And at the moment Yucca is where that is slated to go.

Senator ALLARD. Yes.

Ambassador BROOKS. But there is relatively little that goes directly from the weapons program into Yucca.

Senator ALLARD. You are passing it through the MOX facility——

Ambassador BROOKS. Yes, sir.

Senator ALLARD [continuing]. Which right now we have at Savannah River.

Ambassador BROOKS. Yes, sir.

Senator ALLARD. And that is also used to reprocess spent nuclear rods.

Ambassador BROOKS. Well, the MOX facility does not at the moment.

Senator ALLARD. It does not?

Ambassador BROOKS. No, sir.

Senator ALLARD. Okay, but it has the capability to do that?

Ambassador BROOKS. No, sir.

Senator ALLARD. We would have to build another facility to do that?

Ambassador BROOKS. Yes. The Department—I want to distinguish between things for which I have responsibility.

Senator ALLARD. Okay.

Ambassador BROOKS. The Department as part of the global nuclear energy initiative will be recommending, has recommended, that we move to the construction of some demonstration facilities for both reprocessing and for an advanced burner reactor. We do not have sites located for that and they are not in the NNSA area of responsibility.

Senator ALLARD. And those sites would be the MOX Plus, is that correct?

Ambassador BROOKS. I think that it is probably a better way to think of them as really sort of separate issues. The time scales are different. The principle is different. We looked at whether or not we should somehow combine all of this in one galactic program and decided we should not.

Senator ALLARD. So, moving on then, if we should get in—we are going to have more nuclear power plants. If we are going to decide

to reprocess those rods, you are thinking of a separate facility altogether.

Ambassador BROOKS. Yes, sir.

Senator ALLARD. And in that process you will use—if I say the "Plus MOX," you know what I'm talking about.

Ambassador BROOKS. Yes, sir.

Senator ALLARD. I do not know what your official technology is there. But it is an enhanced reprocessing.

Ambassador BROOKS. Yes, sir. The vision that we have now—when I say "we" I do not mean NNSA; I mean the administration generally—for the future of nuclear power has a number of components, but it is based on the belief that we should not plan to put once-through fuel in a geologic repository because *(a)* you are going to use up all the space available, and *(b)* you are in fact putting a lot of energy content there; and finally, you are putting a huge amount of stuff with very long half-lives, which means that you have to analyze for periods that are probably beyond our capability.

So the idea is that we would take the fuel that comes out of traditional light water reactors, we would reprocess that through a new approach not previously used, that will give us a trans-uranic fuel, if you will, a fuel that is plutonium plus other trans-uranic isotopes, and that that fuel will go into fast reactors.

What this will do for you is—there is still sooner or later going to be stuff that is going to go in a geologic repository. But the volume will be reduced substantially and the peak dose period will be reduced substantially and you will get more of the energy content out of the fuel.

If you do that, then what you have to do is guard against any question that you are harming our traditional nonproliferation approach, which is one of the reasons the United States has been skeptical of reprocessing in the past. Our approach is to reprocess in a way that is different from traditional reprocessing and that makes the fuel less interesting—I do not want to say uninteresting, but less interesting from a proliferation perspective—but then also to create a global regime of essentially fuel leasing. That is not exactly the term we use, but where only a limited number of States would do this reprocessing and those are States with traditional strong safeguards.

So what we think all this will do is it will allow us to meet the future energy needs through nonpolluting nuclear power, it will allow us to do that in a way that does not require small countries to bear all the burden of disposal, because large countries would send them fuel and then take it back for reprocessing, and that would not put us in the situation where we are now, where, depending on your projections of future nuclear power, we need nine more Yucca Mountains this century, which I think most of us believe are not likely to be easy to find.

Senator ALLARD. Thank you, Mr. Chairman. His response took longer than I anticipated.

Ambassador BROOKS. My apologies.

Senator ALLARD. I figured you would be interested in it, so I did not try and cut his response short. Thank you.

Senator DOMENICI. It is all right. I was interested.

Senator ALLARD. I figured you would share some interest there.

Senator DOMENICI. I already knew about it, but I was interested.

Senator ALLARD. I hope I did not duplicate a previous question you asked.

Senator DOMENICI. No, no.

I think the new word that we are all trying to use is "recycling".

Senator ALLARD. Yes, recycle.

Senator DOMENICI. Instead of "reprocessing".

Senator ALLARD. That is correct.

Ambassador BROOKS. Yes, sir.

Senator ALLARD. It is an enhanced recycling process.

Senator DOMENICI. Yes, it is recycling. And the process we are going to use has not been used before in full-scale. That is why this process is pretty risky, because it is going to take a long time. Everything sounded so nice, but you see, that means you are going to have Yucca sitting over here waiting for this new recycled fuel. It has got to wait over there, circling the globe, for about 30 years, it looks to me, 20, 30 years.

I do not quite know how we are going to get legislation passed to do that.

Senator ALLARD. Are we not in the courts on that right now, Mr. Chairman?

Senator DOMENICI. Yes. But we have got to pass something soon deciding what happens to the Yucca property.

Senator ALLARD. I see.

Senator DOMENICI. The real estate, the railroads, and the physical site. And in doing that, we have got to kind of decide, kind of say what we are going to use it for, so Harry Reid will know. If nothing else, we have got to tell him. Right now we are telling him, it looks like we are telling the world we are going to put spent fuel rods in there.

You just heard him say we are not going to do that. He said it round-about. But everybody is saying we are not going to do that. So we have got a facility that we are moving in that direction and we are not going to use it for that. We have got to change the law and say what is it we are going to use it for.

And we have got one hang-up. There is a law that says we have got to put military waste in that facility, and we do not quite understand how that fits. I do not know, the Ambassador may have negotiated that arrangement. Maybe he knows. That is a big one. But if that was not in the way, we could make Yucca sit over there for 30 years and wait for this new recycled material.

You understand, this new recycled material is a fantastic achievement, human achievement, if it works. Just remember this number: you reduce the quantity a hundred-fold. So if you are going to put a spent fuel rod in and it was going to take 100 cubic feet and you do this recycling, it is going to be one cubic foot of material. That is pretty interesting, is it not?

Senator ALLARD. It is, and I have seen part of that process.

Senator DOMENICI. The process, what you have got left over is very easy to handle because it does not have the half-life that he spoke of generally.

Senator ALLARD. With the enhanced process. I think that is wonderful.

Senator DOMENICI. Right, terrific. Well, that is the President's GNEP program. That is what we are going to try to do. We do have some money in here; we are going to start it.

Senator ALLARD. Good.

Senator DOMENICI. Two hundred forty million dollars, $250 million. But that is such a little down payment. Japan is interested, India is interested. Maybe we can start it and turn into an international program. They might be willing to help us pay for it.

I am willing to give it a shot if I could figure out how Yucca fits in the middle of this.

Senator ALLARD. Well, I am with you, Mr. Chairman.

LOS ALAMOS NATIONAL LABORATORY

Senator DOMENICI. We will work on it.

Let me talk down to these things that are important to people in New Mexico: the pension program over there at LANL. I sent you a letter urging you to oppose the University of California's efforts to separate the LANL pension from the broader university retirement system. I got your letter, in which you indicated you did not have enough information. Has anything changed since you wrote me the letter that might affect the LANL retirees?

Ambassador BROOKS. I continue to be absolutely committed, as I told you before, to making sure they are treated fairly. I continue to have nothing from the university other than what I have heard in the press. I am told that a letter will arrive shortly explaining what the university proposes. I have not seen it yet as of this morning. So I know nothing more than I knew when I signed the letter.

GLOBAL NUCLEAR ENERGY PARTNERSHIP

Senator DOMENICI. I have one question on GNEP. Mr. Paul, can you please tell me what the NNSA role is in the Global Nuclear Energy Partnership and what NNSA's budget provided for 2007 to 2011? Can you do that or, Mr. Ambassador, you do it, whichever?

Ambassador BROOKS. Mr. Paul is up here.

Mr. PAUL. Thank you for the question, Mr. Chairman. We just recently as of last week reached an understanding with the Office of NE, the Nuclear Energy Office, about the areas where NNSA would play in Global Nuclear Energy Partnership. They are, in broad categories: the development of the advanced safeguards and security technologies that are a key element to GNEP. They are the establishment of the reliable fuel services bank, that independent central bank, the 17.4 metric tons designated HEU to be blended down to LEU to allow recipient States to access that energy, in return for not developing a fuel cycle indigenously. And thirdly, providing the primary support for establishing the "G" and the "P" part of "GNEP," the global partnership portion, that is putting together the supplier group partnership that you eloquently alluded to, France, Japan, Russia, China, United Kingdom, ourselves, with strong involvement by the IAEA, and potentially others, as well as the recipient State partnership, those countries that would forswear developing an in-house capability.

Those are the three primary areas where the NNSA and largely NA–20, the nonproliferation shop, would play a lead role. The most

significant area where we anticipate a budget impact would be in developing the safeguards technologies. We do not have a specific request in the 2007 budget for that because it is an extension of the current safeguard technology advancement work that we are doing, for example, at the Rekasho site in Japan. But we anticipate in the near future having a budget request tailored to those three areas, Mr. Chairman.

Senator DOMENICI. I had two other questions with reference to GNEP and that pertain to you, Mr. Paul. I am going to submit them. You can answer them for the record.

Mr. PAUL. Thank you, sir.

Senator DOMENICI. You have got 10 days, whatever it takes. We have some further questions that we will submit in writing, Mr. Ambassador.

Senator, do you have any further question, either now or that you want to submit?

ADDITIONAL COMMITTEE QUESTIONS

Senator ALLARD. I may have a couple of questions to submit later on, Mr. Chairman.

Senator DOMENICI. All right. The record will be open for a couple of days for you to submit them.

Senator ALLARD. That would be good, thank you. I will review with my staff.

Senator DOMENICI. All right. If there are no further questions, we stand recessed, and we thank you for your testimony.

Oh, I have one last thing, Mr. Ambassador. I make it as an observation and I should have done it in my opening remarks and I apologize. You still have a lot of contracts for big construction projects and big pieces of equipment and big things. You are still a big stuff guy. NIF is a big project, getting it finished. I want to make sure that you know that, even though we did not go through project by project, that we are asking you clearly to make sure that somebody is watching and being careful that those programs are being managed properly.

We do not want overmanagement. That is, we do not want 10 people managing the same thing. But we do not want to get caught with big errors that should have been found out months and months earlier dropped on our head at the last minute on any of these programs and projects. We have been told that that is not going to happen any more, and I would just like your thoughts on the subject. I know we have got new management in one laboratory and you have got a lot of other things going, but could you address that issue, please?

Ambassador BROOKS. And we also have new management at the Nevada Test Site, that started its transition today or yesterday and will be taking over this summer.

The Secretary has made it very clear that he expects us to do a much better job at making promises that we can keep and then keeping our promises, and he regards stating that we are going to build something for a fixed amount of money in a fixed time as a promise. So he has made it very clear that he expects us to improve the Department's historic performance.

Our performance right now is pretty good on those things that we have done before and pretty bad on these large, one-of-a-kind projects. But we are gradually improving. We are absolutely committed to doing what you just told me to do, sir.

Senator DOMENICI. Well, let us hope that that is the case. We do not have a lot of latitude in these budgets any more. We cannot have another NIF with a $200 million, $300 million, $400 million disparity. We cannot pay for them. That is all there is to it. So I hope we are not going to destroy some laboratory because somebody makes a mistake.

Ambassador BROOKS. I have no intention of doing that, sir.

[The following questions were not asked at the hearing, but were submitted to the agency for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SENATOR PETE V. DOMENICI

NATIONAL IGNITION FACILITY—COSTS AND FUNDING

Question. Do we understand the costs of each of the three facilities (NIF, Z, and Omega)? Specifically: What is the relative cost of full-energy experiments on each facility?

Answer. The current cost for a full energy shot at the Omega laser system is $10,000 per shot which includes operational costs of people and material, (including optics replacements) to operate the laser and full cost of laser and experimental diagnostics. Following completion of the OMEGA Extended Performance (EP) Project, the cost per shot for both OMEGA and OMEGA EP full energy operations will be approximately $25,000.

In steady state operations, the equivalent facility cost at NIF will be approximately $550,000 per full energy shot.

For the refurbished Z (ZR), the equivalent cost is approximately $100,000 per full energy shot.

Question. Do we understand the costs of each of the three facilities (NIF, Z, and Omega)? Specifically: What will be the annual costs for activities at each facility in 2011—specifically what are the budgets from RTBF, Campaigns, DSW, and other activities such as DOE Office of Science and WFO at NIF, Z and Omega?

Answer. In 2011, the annual facility costs for the National Ignition Facility (NIF), OMEGA and ZR will be approximately $150 million, $25 million and $30 million respectively.

In the fiscal year 2007 budget submission, 2011 facility and operations costs for OMEGA and NIF all appear in the Inertial Confinement Fusion Ignition and High Yield Campaign. The operations costs for ZR are in the Readiness in Technical Base and Facilities budget line.

Program costs for the design and execution of experiments at these facilities are borne by Campaigns, Directed Stockpile Work, etc. Campaigns (other than the Inertial Confinement Fusion Ignition and High Yield Campaign) do not pay for facility or operations costs.

Question. Although the NNSA is investing significant resources in understanding and mitigating the issue of optics damage on NIF, we understand that the present estimated cost of replacement optics on NIF is $900,000 for each full energy shot. We also understand that the operational costs of NIF have increased from the original estimate of $60 million per year to the present estimate of ~$150 million in fiscal year 2010.

How do you measure the benefits realized from the costs at each facility—both benefits to the overall high-energy density physics program and the NW program?

Answer. The annual operational cost estimate for the National Ignition Facility (NIF) has remained essentially constant in as-spent dollars since the new project baseline was established in fiscal year 2001. There have been (and will continue to be) refinements in the estimates based on experience in operating the facility and changing economic conditions. Optics refurbishment costs are modeled using observations from the NIF Early Light campaign and off-line laboratory data and are consistent with the annual operational cost estimate to meet the 2010 and 2011 goals and steady state operations.

The cost estimate for replacement/refurbishment of NIF optics is $30 million per year during steady state operations. This covers the full spectrum of energies

planned for the experimental campaigns and corresponds to a per-shot optics refurbishment cost ranging from approximately $40,000 to $400,000.

The benefits of NIF, OMEGA, and Z are measured by the degree to which they meet Stockpile Stewardship Program requirements. Experiments at these three facilities support weapon assessment and certification and are required to meet level 1 and 2 milestones contained in National Nuclear Security Administration (NNSA) implementation plans. As discussed in the 2001 NNSA High Energy Density Physics Study Report, each facility has unique capabilities and is a component of the integrated NNSA high energy density physics program. As an example, experiments conducted in fiscal year 2003 through fiscal year 2005 at OMEGA were essential in validation of a new Advanced Simulation and Computing (ASC) weapon secondary performance simulation code. Validation of this code was a major ASC milestone completed in December 2005. Z has executed important experiments in materials science, nuclear weapon effects, and will shortly execute materials science experiments with special nuclear materials. NIF will examine issues related to thermonuclear burn in nuclear weapons and other important uncertainties that can only be addressed via access to the extreme conditions of matter NIF provides. NIF experiments in the thermonuclear burn area will address "the most important outstanding issue in weapon physics," as stated by the Defense Science Board in the summer of 2004. NIF ignition will also provide a critical integrated test of NNSA's simulation code and design capability.

Question. What steps have been taken at each facility to minimize experimental costs and optimize scientific return? Has consideration been given to conducting staging experiments on smaller facilities in order to obtain optimal return from the high-cost experiments on NIF?

Answer. Sandia National Laboratories (SNL) has effectively implemented a "six sigma" process which has been used to increase efficiency and reduce costs at Z and other Sandia facilities. The National Ignition Facility (NIF) Project has engaged external industrial participants and reviewers to carefully examine processes for installation of laser components and other "mass-production" like tasks required to complete the NIF Project. This has been important to the NIF Project achieving its cost, scope and schedule targets and will also enable efficient operations once the project is complete. The University of Rochester utilizes a rigorous process to extract the maximum number of OMEGA experiments in a given timeframe. Experimental scheduling and facility configuration are managed so as to allow the maximum amount of experimental shots per week.

OMEGA and Z/ZR use a peer review process to judge experiments proposed for each facility. OMEGA and Z/ZR each have "facility directors" who are charged by NNSA with providing an experimental program that meets NNSA requirements and best satisfies the needs of Stockpile Stewardship. Evaluation of the performance of Z/ZR and its contribution to stockpile stewardship are a component of the NNSA annual evaluation of SNL. Similar processes will be in place for NIF following Project completion.

The Inertial Confinement Fusion Campaign has always employed a staging strategy so as to allow effective use of all facilities. For the case of NIF, all National Ignition Campaign participants are engaged in developing integrated plans for optimally utilizing National Nuclear Security Administration facilities (OMEGA, Z/ZR and Trident) in support of the ignition goal. Integrated Experimental Teams with representation from all sites communicate regularly to develop and review plans for performing specific experiments at OMEGA, Z/ZR and Trident. As an example, hundreds of shots per year will be executed at OMEGA in support of the NIF indirect drive program between now and fiscal year 2010. When NIF is in full operation, a portion of OMEGA time will continue to be devoted to staging of experiments for NIF.

Question. Given the high cost of experiments on NIF, does the NNSA plan to have users other than the ICF program pay full cost recovery to utilize NIF?

Answer. The cost of National Ignition Facility (NIF) operations for Defense Programs and other Department of Energy users will be paid for directly by the National Nuclear Security Administration (NNSA). This is the same model used for OMEGA, Z/ZR, and other major NNSA facilities. NNSA also intends to pay the operational costs for the small fraction of NIF devoted to university use, in the same manner that operational costs for university use of OMEGA are covered.

Operational costs for users external to NNSA and the Department of Energy will be paid for by the users. A few such experiments are under discussion but none are currently planned or funded.

NATIONAL IGNITION FACILITY BUDGET

Question. Does the fiscal year 2007 budget support the administration's goal of ignition by 2010?

Answer. Yes, the National Ignition Facility Project and the National Ignition Campaign are presently on schedule and within budget. The President's budget supports ignition experiments commencing in 2010.

Question. Do you agree that the JASON report on the NIF ignition plan was a fair and accurate estimate of the NIF program?

Answer. The National Nuclear Security Administration (NNSA) agrees that the JASON report provides a valuable analysis of the ignition campaign including many useful recommendations. NNSA has already begun to implement many of these suggestions.

NNSA does not, however, agree with all of the details of the report. In particular, we do not believe that there was adequate recognition of the role the advanced target design has played. In the last few years, advanced design has increased the margin for the first experiments making ignition possible for laser energies of one mega joule.

Question. The JASON report, which you believe to be an accurate report, stated that ignition by 2010 was "unrealistic." If this top-caliber scientific review believes this goal to be "unrealistic", then why should we support a budget request that makes deep cuts to non-NIF sciences, such as Z, and makes reductions in the Science and Engineering Accounts to support a goal that is "unrealistic"?

Answer. It is important to recognize the context in which the JASON used the term "unrealistic." To quote their report, "While it is not impossible that everything will work 'just so' in the very first ignition attempts, it is unrealistic to expect that to happen. However, that first campaign will be followed by two others in 2011, and each experiment will move the program toward the goal of achieving fusion ignition." In using the word "unrealistic" JASON is describing their assessment of the likely outcome of the first few shots (i.e., "very first ignition attempts") as opposed to the overall probably of success of the ignition campaign.

The JASON report gave the following overall assessment of the plan for the pursuit of ignition: "The Program has identified a series of tests of the key physical processes and diagnostic instruments that provides a reasonable roadmap for progress toward ignition after the initial attempts." The JASON report also states: "First attempts to achieve ignition on NIF are likely to take place in 2010—this is an important and valuable goal that has strongly focused the efforts of the NIF Program."

In summary, JASON believes that while the initial attempts at ignition will not succeed, execution of the first ignition experiment promptly in 2010 will benefit the program, and the overall plan to achieve ignition is reasonable.

Question. Your budget increases NIF experimentation, Demonstration and Ignition budgets by over $50 million. At the same time funding for non-NIF related science is down by $115 million. Funding for Z is cut by $30 million. I was also disappointed to learn that you have moved the entire Z machine budget to the Readiness and Technical Base and Facilities Account and removing it entirely from the inertial Confinement and High Yield Science Campaign.

I believe the NIF-at-all-cost-attitude of your organization is short-sighted and irresponsible. Please explain why you ignored congressional direction to establish a balanced program for the ICF campaign?

Answer. Of the $115 million quoted, at least $60 million represents congressional add-on activities which, while technically valuable, could not continue to be supported in the fiscal year 2007 budget request due to higher priorities and budget constraints. The $30 million figure quoted for reduction at Z does not include Readiness in Technical Base and Facilities funds intended for Z operations. Accounting for this, places the reduction at about $14 million.

The construction of the National Ignition Facility (NIF) and the execution of ignition experiments is a major commitment for the National Nuclear Security Administration (NNSA) and the Department of Energy. As stated in the 2001 High Energy Density Physics Study Report, however, a viable program at OMEGA, Z/ZR, and NIF is also needed to support Stockpile Stewardship. NNSA has maintained an adequate program at these three major facilities since the inception of NIF; however, budget constraints make this impossible in fiscal year 2007. The fiscal year 2007 budget request for the Inertial Confinement Fusion and High Yield Campaign is $85 million less in total than the fiscal year 2007 Inertial Confinement Fusion and High Yield Campaign Future Years Nuclear Security Program budget shown in the fiscal year 2005 NNSA budget request.

NNSA has chosen to reduce experimental availability at Z/ZR in fiscal year 2007 in order to maintain the schedule of the National Ignition Campaign as defined in the plan submitted to Congress in June 2005. This reflects the importance of NIF and the ignition program. As the Z machine will be down for refurbishment in fiscal year 2007, the reduction to Z operations will impact the facility for only the latter portion of the year. NNSA intends to operate Z at the level required to support Stockpile Stewardship Program goals in fiscal year 2008. Experiments not conducted at Z/ZR in fiscal year 2007 will be rescheduled to fiscal year 2008 or later years with minimal long-term impact to Stockpile Stewardship.

Question. Why is it no longer in the best interest of the NNSA to support a balanced program that will complement scientific research at all three institutions?

Answer. The National Nuclear Security Administration (NNSA) believes it is important to support a balanced program in high energy density physics consistent with program priorities and the budget. As stated in the 2001 High Energy Density Physics Study Report, the National Ignition Facility (NIF), OMEGA, and Z provide complementary capabilities and are essential to the success of the Inertial Confinement Fusion Program and stockpile stewardship.

NNSA has chosen to reduce experimental availability at Z/ZR in fiscal year 2007 in order to maintain the schedule of the National Ignition Campaign as defined in the plan submitted to Congress in June 2005. This reflects the importance of NIF and the ignition program. As the Z machine will be down for refurbishment in fiscal year 2007, the reduction to Z operations will impact the facility for only the latter portion of the year. NNSA intends to operate Z at the level required to support Stockpile Stewardship Program goals in fiscal year 2008. Experiments not conducted at Z/ZR in fiscal year 2007 will be rescheduled to fiscal year 2008 or later years with minimal long-term impact to Stockpile Stewardship.

The fiscal year 2007 budget request supports a solid program of experiments at OMEGA in support of the National Ignition Campaign. Non-ignition weapon physics experiments have been realigned due to budget constraints. Experimental scope changes are being planned so stockpile program risks are minimized.

COMPLEX OF THE FUTURE

Question. On Monday, Tom D'Agostino briefed me on the Nuclear Complex of the Future. The Department has developed a plan to consolidate its operations in fewer locations, which should reduce security costs and reduce the overall number of facilities the NNSA must maintain by 2030.

In addition it supports the Reliable Replacement Warhead program and begins to catch up on the dismantlement of weapons no longer in the stockpile.

What I believe is missing from this complex of the future is the decrease in the overall number of weapons. If we don't decrease the number of weapons, the complex will still need to support the same eight systems plus the RRW.

It seems to me that you have traded off facilities, science and people but kept the same number of weapons and workload unchanged.

Why doesn't this plan contain a proposal to support fewer weapons systems? What actions does the DOD need to see before it will release one of the aging weapons systems?

Answer. Our Complex 2030 planning scenario is based on a smaller stockpile to meet the President's vision for the lowest number of warheads consistent with the Nation's security. However, pending a change in requirements from the Department of Defense (DOD), the National Nuclear Security Administration (NNSA) must support the current Nuclear Weapon Stockpile Memorandum signed by the President and the Joint DOD–NNSA Requirements Planning Documents as approved by the Nuclear Weapons Council.

Ongoing discussions with the DOD indicate that progress on Reliable Replacement Warhead concepts and on actions to achieve a responsive nuclear weapons complex infrastructure as described in the 2001 Nuclear Posture Review would be major factors in changing existing DOD plans. In addition, NNSA must demonstrate that we can follow through on existing commitments as we transform the stockpile and its supporting infrastructure.

Question. Has the DOE discussed with the DOD the benefits of reducing the diversity of weapon systems?

Answer. The National Nuclear Security Administration (NNSA) has shared with the Department of Defense (DOD) the costs and benefits associated with maintaining specific warheads. As expected, the costs of maintaining a number of warhead types significantly exceeds the unit costs of maintaining specific quantities of any particular type of warhead. The DOD appreciates the assurance gained by avoiding single-mode failures enabled by having diversity in the stockpile. Cost-benefit anal-

yses weighing the more quantitative costs of maintaining a number of warhead types compared to the harder-to-quantify benefits of warhead diversity are continuously made and figure heavily into discussions regarding the future stockpile.

Question. Why don't you eliminate or delay the W–80 Life Extension Program?

Answer. The Department of Defense (DOD) and the National Nuclear Security Administration (NNSA) are working in partnership to define the stockpile of the future. The 2030 stockpile that we envision would be smaller with a majority of warheads based on Reliable Replacement Warhead (RRW) concepts as well as a limited number legacy warheads that have been refurbished in life extension programs (LEPs). Thus we must support some number of legacy warheads, and their associated LEPs, even as we seek to evolve to a stockpile consisting primarily of RRW designs. In recent discussions, the DOD is working now to define plans for the future of nuclear cruise missiles. Pending a final decision from the DOD, the NNSA remains committed to supporting the plans contained in the current Nuclear Weapon Stockpile Memorandum signed by the President and the Joint DOD–NNSA Requirements Planning Documents as approved by the Nuclear Weapons Council.

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Question. The Defense Nuclear Facilities Safety Board has raised "safety basis" issues over the past several years that have significantly impacted the throughput at Pantex. Deputy Secretary Sell has commented on the need for NNSA to retain risk-related decision-making authority while assessing DNFSB recommendations.

What actions has the NNSA taken to assure safety in its operations at Pantex while addressing the significant backlog in surveillance and dismantlement?

Answer. For each nuclear weapon system, the National Nuclear Security Administration (NNSA) conducts an extensive hazard analysis and corresponding hazard mitigation process to assure safety of operations. This process is known as Seamless Safety for the 21st Century, SS–21. However, since the end of the Cold War, this process has become more and more risk averse. The zero-risk approach results in over-conservatism, which similarly impacts the ability to accomplish work at the Pantex Plant. Therefore, the NNSA is transitioning to a risk-informed decision approach that allows us to manage risk more effectively in ensuring safe and secure operations at Pantex and other facilities. The NNSA has several ongoing initiatives related to nuclear explosive operations that will incorporate this revised approach. These initiatives include the elimination of specific threats such as thermal and electro-static discharge via facility upgrades and modifications, the allowance of a more qualitative hazard analysis approach as opposed to the existing practice of over-conservative quantitative probability estimates, and the revision and clarification of existing rules and standards to reduce the possibility of misinterpretation and to confirm their added benefit to safety. These initiatives are ongoing and increased ability to perform work and reduction in backlogs should be realized starting in late fiscal year 2006.

Question. How do the budget priorities reflect these decisions and what are examples of specific steps to increase throughput?

Answer. The budget priorities reflect risk-related decision making in the fiscal year 2007 budgets and beyond. The dismantlement budget has been increasing since 2005 and the National Nuclear Security Administration (NNSA) is ensuring that all Stockpile Systems activities supporting the accomplishment of surveillance work at the Pantex Plant are funded. The corresponding Seamless Safety for the 21st Century (SS–21) hazard analysis activities have top funding priority so that weapon operations are upgraded to new safety criteria.

In early February 2006, the NNSA developed an extensive plan that contains several activities to increase throughput. The activities include steps to authorize specific multi-unit operations in Pantex facilities, additional facility configurations to prevent postulated accident scenarios, a review of existing Nuclear Explosive Safety practices and standards, additional hazard analysis process efficiencies, and a streamlining of the existing stockpile evaluation program.

Regarding Defense Nuclear Facilities Safety Board recommendations, the NNSA expects that in early fiscal year 2007, the only open recommendation related to nuclear explosive operations at the Pantex Plant, Recommendation 98–2, "Accelerating Safety Management Improvements at the Pantex Plant", will be closed.

Question. What actions has the NNSA taken to assure the "safety basis" process is fixed?

Answer. Over the past 19 months, the National Nuclear Security Administration (NNSA) has initiated several activities to install risk-informed decision-making throughout the nuclear weapons complex. These activities include an effort to identify and remove inefficiencies in our hazard analysis process, streamlining of the

process itself, and better documentation and communication with the national laboratories and the Pantex Plant. Specifically, in early fiscal year 2005, the NNSA revised the process steps and interfaces between the national laboratories and the Pantex Plant for addressing identified hazard scenarios for nuclear weapons operations. This process revision is currently being implemented for the W76 and W80 Seamless Safety for the 21st Century programs. The NNSA is also in the process of updating the standard approach for conducting hazard analyses.

Question. How will the increase in W76 dismantlement and subsequent Life Extension Program rebuild affect throughput?

Answer. For the W76, there is sufficient throughput planned at Pantex for both the dismantlement and Life Extension Program within the existing safety authorization basis. We are also examining increased throughput at Pantex by seeking improved means to mange risk in ensuring safe and secure operations at that facility.

GNEP

Question. Mr. Paul, can you please tell me what the NNSA's role is in the Global Nuclear Energy Partnership and what the NNSA budget provide for fiscal year 2007-fiscal year 2011?

Answer. NNSA plays a key role in GNEP—to reduce the threat of nuclear proliferation through the enhancement of international regimes that advance nonproliferation goals and the deployment of safeguard technologies and systems. These missions are currently addressed by ongoing programs within our Office of Defense Nuclear Nonproliferation (NA–20). As such, initial support to GNEP is part of the base funding for this Office and additional funds for fiscal year 2007 were not requested. NNSA expects that future budget requests will be necessary but must be tied to the level of engagement by the international community in advancing GNEP concepts and initiatives such as the reliable fuel services, developing and deploying advanced safeguards, and collaboration on small-scale reactor development.

GLOBAL NUCLEAR ENERGY PARTNERSHIP

Question. How does the NNSA nuclear weapons program contribute to our nonproliferation objectives?

Answer. Having a safe, secure and reliable nuclear weapons stockpile is one element of our national security posture that contributes to the defense policy goals of dissuasion and assurance. As stated in the 2006 Quadrennial Defense Review, maintaining a robust nuclear deterrent helps the United States to "shape the choices of countries at strategic crossroads." Potential adversaries are dissuaded from developing their own weapons of mass destruction programs because the United States nuclear forces are so powerful that trying to compete militarily is beyond the means of all but a few, already nuclear-weapons-capable countries. Our allies, such as Japan and the Republic of Korea, are assured of our willingness to come to their defense with our nuclear weapons if necessary, so they do not feel the need to develop their own nuclear weapons programs. Additionally, knowledge gained from research and development in our nuclear weapons program assists our intelligence community in developing key intelligence indicators of proliferant activity, enabling early intervention by all elements of national power—diplomatic, economic, and military—to be engaged in efficient and effective nonproliferation activities.

The nuclear weapons program also sets a high standard for material accountability, nuclear weapons safety and security, and identification and transfer of highly enriched uranium, that is excess to national security needs, for downblending. Finally, the weapon program organizations provide expert analysis and support to agencies that have a lead responsibility for special nuclear material detection, improvised nuclear device detection and defeat, and nuclear accident incident response.

NNSA MANAGEMENT OVERSIGHT

Question. Over the last 5 years, we have had several events within the Complex that have caused this committee great concern. They include: (1) Multi-billion dollar cost growth and delay of the NIF at LLNL; (2) Pantex production plant that has come to an effective standstill, without producing one refurbished device in almost a year; (3) The LANL shut down; (4) Mixed Oxide Facility—the estimated cost has risen from roughly $1 billion to an estimated $3.5 billion; (5) A major error in the construction of a multi $100 million uranium storage facility at Y–12 that halts construction and jeopardizes the secure storage of enriched uranium.

I am interested to know why you believe the NNSA has had such difficulty in delivering these projects on time and on budget. What actions is NNSA taking to prevent such occurrences in the future?

Answer. There have been problems with specific projects and our analysis has led to both project specific remedies and overall process improvements within the National Nuclear Security Administration (NNSA). Although the specifics of the cited examples vary widely, they share three attributes—each developed over a long period of time; each involved the actions and decisions of many levels of management; and each involved significant stakeholder issues.

My senior management and I intend to prevent such occurrences in on-going and future projects. Each of us, in dealing with subordinates and with each other, will avoid or substantially reduce the potential risk of problems of this type arising in the future by holding up all actions and decisions to five screening criteria:

—Does the change improve line accountability?
—Does the change cause people to be more or less risk adverse?
—Does the change reduce micromanagement?
—Does the change comply with Headquarters/site office Feds set what must be done and contractors determine how it is done?
—Is the change cost effective?

The first criterion—line accountability—is the unifying thread for all five. This is a continuous, real time accountability, not an "after-the-fact" surrogate accountability accompanied with punishment. It is imperative that all members of NNSA's dual lines of accountability—programmatic accountability for setting goals and operational accountability for conducting work—acknowledge openly all factors affecting their actions, the unfolding of the consequences of their actions over time; and the probable end result of those actions. That acknowledgement, shared up and down the chain of authority, will create a real-time accountability whereby each person will hold themselves and their subordinates accountable for the performance of their programs and their sites.

This is not a simple task. NNSA's dual lines of accountability operate within a gauntlet of external players who could impose decisions sharply focused on narrow segments of large interacting systems. There is an ever-present temptation for line management to adopt these narrow solutions solely to avoid risks inherent in doing otherwise. More subtly, well-intended line management can usurp the authority of subordinates through overly prescriptive goals and policies. This real-time accountability will hold each individual accountable for inappropriate avoidance of risks, for micromanagement, and for making proactive, real-time course corrections when we realize operations are heading other than toward the intended goal. These five questions seem simple on their face, however if used aggressively, daily, and purposefully from my level out to the factory floor they will shape the performance of NNSA and support cost-effective success across the complex.

SPECIAL NUCLEAR MATERIAL SECURITY

Question. Doesn't it make sense to consolidate the SNM to the minimum number of locations? Why don't you immediately take those actions to relocate the SNM to LANL, Pantex or Nevada?

Answer. We strongly agree with the principle of consolidating special nuclear material (SNM) to a fewer number of locations. We started consolidating Category I/II SNM to fewer sites, and to fewer locations within sites. We will improve the long-term security posture at our national laboratories by phasing out operations involving Cat I/II quantities of SNM. This includes eliminating the need for a Cat I/II SNM security posture at Sandia National Laboratories in New Mexico by 2008. Our plan is to remove all Cat I/II SNM from Lawrence Livermore National Laboratory by the end of 2014. By 2022, all research and development (R&D)/production activities involving Cat I/II SNM would cease in facilities operated by Los Alamos National Laboratory. As that is accomplished, these labs could transition to a common defense industry site security posture with reduced security costs. The consolidated plutonium center, once operational, would host all R&D, surveillance, and manufacturing operations involving Cat I/II quantities of plutonium. The Uranium Processing Facility at the Y–12 National Security Complex would consolidate existing highly enriched uranium contained in legacy weapons, dismantle legacy warhead secondaries, support associated R&D, and provide a long-term capacity for new secondary production. As a result, Y–12 would reduce its production and SNM storage footprint by about 90 percent, leading to significantly reduced costs for physical security at that site.

Question. What are your plans to control security costs without consolidating SNM to a minimum number of locations? What number is that, and why is that

the minimum number? Does not the consolidation of SNM also save substantially in the STA costs of the department as well? If not, why not?

Answer. We strongly agree with the principle of consolidating special nuclear material (SNM) to a fewer number of locations to control security costs. However, we do not propose to consolidate at a single location. Instead, we propose to consolidate to centers of excellence with Category I/II quantities of SNM for: (1) uranium; (2) plutonium; (3) weapon assembly/disassembly involving high explosives; and, (4) large-scale testing. We will improve the security posture and reduce costs at our national laboratories by phasing out operations involving Category I/II quantities of SNM. Thus, there will be four or fewer sites in the long-term with SNM requiring costly security.

In the long-term, consolidation of SNM will save secure transportation asset (STA) costs for the Department as well. However, moving material to de-inventory a site does increase the number of shipments and resulting costs in the near term.

"Z" 5-YEAR PLAN

Question. The NNSA's fiscal year 2007 congressional budget request for the Inertial Confinement Fusion Ignition and High Yield Campaign eliminates technical alternatives and near-term stockpile support within the National HEDP program by redistributing resources from fiscal year 2007 to fiscal year 2010 in order to focus on performing the first ignition experimental campaign on NIF in fiscal year 2010.

What is the administration's plan to restore balance within the national program and utilize the complementary strengths and capabilities of Z, Omega and NIF to ensure the short-term as well as the long-term health our nuclear deterrence?

Answer. The National Nuclear Security Administration (NNSA) budget request for fiscal year 2007 is highly constrained. NNSA has chosen to reduce experimental availability at Z/ZR in fiscal year 2007 in order to maintain the schedule of the National Ignition Campaign as defined in the plan submitted to Congress in June 2005. This reflects the importance of the National Ignition Facility (NIF) and the ignition program. As the Z machine will be down for refurbishment in fiscal year 2007, the reduction to Z operations will impact the facility for only the latter portion of the year. NNSA intends to operate Z at the level required to support Stockpile Stewardship Program goals in fiscal year 2008. Experiments not conducted at Z/ZR in fiscal year 2007 will be rescheduled to fiscal year 2008 or later years with minimal long-term impact to stockpile stewardship.

The fiscal year 2007 budget request supports the level of experiments at the OMEGA laser facility required to support the National Ignition Campaign. Support for non-ignition weapon physics experiments has been realigned due to budget constraints. Experimental scope changes are being planned so stockpile program risks are minimized.

BALANCED NATIONAL PROGRAM—NIF AT ALL COST

Question. Clearly the NNSA has decided against a balanced program for High Energy Density Physics program. NIF funding is up and every competing technology is down or removed from the program entirely.

Given the series of successes in high energy density physics with pulsed power technologies and the planned completion in fiscal year 2007 of NNSA's 5-year investment of ($165 million) in the Z refurbishment project, doesn't it make sense to increase, not decrease the funding for this facility in order to optimally utilize its anticipated world record X-ray energy output and other enhanced capabilities?

Answer. The fiscal year 2007 National Nuclear Security Administration (NNSA) budget is highly constrained. NNSA has chosen to reduce experimental availability at Z/ZR in fiscal year 2007 in order to maintain the schedule of the National Ignition Campaign as defined in the plan submitted to Congress in June 2005. This reflects the importance of the National Ignition Facility (NIF) and the ignition program. As the Z machine will be down for refurbishment in fiscal year 2007, the reduction to Z operations will impact the facility for only the latter portion of the year.

As stated in the 2001 High Energy Density Physics Study Report, NIF, OMEGA, and Z are essential to the success of Stockpile Stewardship. NNSA agrees that the sensible path is to use the refurbished Z and its enhanced capabilities in support of Stockpile Stewardship. Accordingly, NNSA intends to operate Z at the level required to support Stockpile Stewardship program goals in fiscal year 2008. Experiments not conducted at Z/ZR in fiscal year 2007 will be rescheduled to fiscal year 2008 or later years with minimal long-term impact to Stockpile Stewardship.

NNSA has carefully reexamined the needs of the Stockpile Stewardship Program and concluded that near-term program needs for fiscal year 2008 and beyond can be met with approximately a single shift of operations at Z/ZR. This is the historical

level at which NNSA has funded the operations of Z. While an additional shift of operation would allow greater exploitation of the significant scientific opportunities at Z/ZR, tough choices have been made within the current constrained budget environment.

Question. From a risk management perspective, is it a sound strategy to put our resources disproportionately on the NIF technology and the associated approach to ignition, eliminating balance in the National ICF Program?

Answer. Since the inception of the Inertial Confinement Fusion (ICF) program, the National Nuclear Security Administration (NNSA) has supported numerous technologies and alternative approaches to demonstrating inertial fusion ignition. Review committee reports from the National Academy of Sciences and other groups have urged the NNSA to focus on the demonstration of ignition using high power solid state lasers (the National Ignition Facility (NIF) and OMEGA), as this was the lowest risk and most expeditious path to success. NNSA agrees with this conclusion and has focused on the solid-state laser path to ignition since the mid 1990's.

It is a sound strategy to maintain an appropriate level of technical diversity and risk mitigation within the program. The NIF ignition program itself includes two major approaches to ignition, namely indirect drive and direct drive. Within each of these programs a wide variety of target and laser configurations is available for ignition attempts; this provides further risk mitigation.

Pulsed power offers an important alternate approach for the longer term, but no current analyses indicate that it could produce ignition conditions similar to NIF with the scale of the ZR machine. A goal of the NNSA ICF Campaign is to use Z/ZR to define the physics requirements for pulsed power ignition by 2015. Assuming pulsed power fusion turns out to be feasible, a robust ignition capability based on Z-pinch technology would thus require a new machine and would not be available for many years. The funding issues associated with Z operations in fiscal year 2007 are primarily a 1-year problem and should not disrupt NNSA's overall fusion strategy.

In summary, NNSA's strategy is to demonstrate ignition in the near term with high power lasers and assess the feasibility of Z-pinches as a possible future fusion capability.

Question. If the Z-pinch high-yield approach is the approach to risk mitigation—in the event that NIF fails—are we adequately funding the Z-pinch approach, and, more broadly are we performing the necessary assessment of the required next generation pulsed-power technology?

Answer. The Z-pinch program is not the only approach to risk mitigation within the Inertial Confinement Fusion Program. The National Ignition Facility ignition campaign includes two major alternatives, indirect and direct drive. In addition, within each of these alternatives there is a wide range of target and laser configurations available. As discussed by JASON and other review committees in the past, this provides substantial risk mitigation.

The assessment of pulsed power fusion is also an important component of the National Nuclear Security Administration's (NNSA) long-term plans for fusion. There is a specific NNSA program goal to define the physics requirements for pulsed power ignition by 2015. The reduction of shots available at Z/ZR in the latter portion of fiscal year 2007 is a short-term issue that will not unduly impact this overall strategy.

Question. What strengths does each facility (OMEGA, Z and NIF) bring to the national high energy density physics program?

Answer. As stated in the 2001 High Energy Density Physics Study Report, lasers and the Z pulsed power machine are complementary; each provides unique capabilities for the Stockpile Stewardship Program. Lasers (because of their high energy density) provide access to extreme conditions of temperature and pressure unattainable at Z/ZR. Z, on the other hand, provides a cost effective access to large-scale experiments because of its high total X-ray energy output.

The OMEGA laser supports both indirect (X-ray) and direct drive experiments. OMEGA also possesses a very large suite of diagnostics. OMEGA's high shot rate and precision diagnostics provide an important capability for experiments where large amounts of data are required. OMEGA is an essential component of the National Ignition Campaign and will also serve as the major near term laser experimental capability for non-ignition weapon physics experiments. The OMEGA Extended Performance laser will provide a valuable capability for diagnostic and other measurements at OMEGA.

The National Ignition Facility (NIF), with its much larger total energy and power, will be able to reach the extreme temperatures and densities required in many weapons experiments. NIF can produce energy densities approximately 20 times

greater than those achievable at OMEGA or Z/ZR. It is also the only venue for producing thermonuclear ignition—a key Stockpile Stewardship Program requirement.

Z/ZR is ideally suited for experiments where large X-ray energies, lower energy densities, and longer experimental durations are required. Z is also well suited to conduct certain materials property experiments; a particularly important example is material properties experiments with special nuclear materials, which are planned for the near future. The Z-Beamlet laser provides a powerful capability for diagnosis of Z/ZR experiments.

Question. Why is funding for direct drive ICF included in the national program to perform the first X-ray driven ignition campaign in fiscal year 2010?

Answer. Given the current status of Inertial Confinement Fusion technology, direct drive is the most important risk mitigation or backup to the indirect drive experiments in 2010. A specific effort is underway for developing direct drive and some preliminary experiments will be possible in the 2011–2012 timeframe. The National Ignition Campaign plan includes a decision point for these experiments in fiscal year 2009.

The University of Rochester is a major partner in the National Ignition Campaign and is responsible for a major piece of the National Ignition Facility (NIF) indirect drive ignition program. The University of Rochester also continues to make excellent progress in inertial fusion research. As an example, University of Rochester scientists recently executed the first ever OMEGA cryogenic direct drive implosion experiment in which unwanted surface roughness in the solid deuterium-tritium region was removed via use of the heat-generated from the beta decay of tritium. This so-called "beta layering" technique will also be used at NIF. The experience gained from cryogenic experiments at the University of Rochester will be important to timely implementation of cryogenics at NIF.

Question. What fraction of the budget is being identified to address new technologies and scientific breakthroughs?

Answer. Excluding construction, the National Nuclear Security Administration estimates that approximately $20 million per year (averaged over the current 5-year Future Years Nuclear Security Program period) within the Inertial Confinement Fusion and High Yield Campaign fiscal year 2007 budget submission is devoted to new technologies in addition to the mainstream National Ignition Facility indirect and direct drive ignition programs. This includes $11 million per year devoted to pulsed power fusion. The remainder of the $20 million is devoted to short pulse laser-matter research (including petawatt laser work) at the national laboratories and the University of Rochester Laboratory for Laser Energetics as well as university activities. Pulsed power fusion activities are aimed at evaluating the physics feasibility and technical requirements of this concept by 2015.

The achievement of ignition is itself a major scientific breakthrough. Many significant breakthroughs in laser technology, plasma physics, and other fields will make this achievement possible.

SECRETARY OF ENERGY ADVISORY BOARD RELATED QUESTIONS

Question. The DOE received the draft of the SEAB nuclear weapons complex infrastructure task force (NWCITF) report in mid-July 2005 and the official SEAB report on October 4, 2005.

What is the DOE's specific position on the 5 recommendations made in the report?

Answer. Our positions on the 5 recommendations made in the report are set out in the following table.

SEAB Task Force Recommendations	National Nuclear Security Administration Complex 2030 Recommendations
Design Reliable Replacement Warhead (RRW) immediately ...	Same.
Accelerate dismantlements	Same.
Establish Office of Transformation	Same.
Establish Consolidated Nuclear Production Center (CNPC) by 2015.	Establish distributed production centers of excellence with a consolidated plutonium center at an existing Cat I/II SNM site by early 2020's.
Consolidate all Category I/II special nuclear material (Cat I/II SNM) to CNPC long-term.	Consolidate Cat I/II SNM to fewer sites and fewer locations with sites; remove Cat I/II SNM from laboratories.

Question. If the SNM manufacturing and weapons storage were underground in tunnels mines, would that not significantly reduce the physical security costs for the complex?

Answer. Special nuclear materials (SNM) can be adequately protected in either above-ground or underground facilities. SNM manufacturing and weapons storage

underground in tunnels or mines does offer opportunities to reduce the physical security costs for the complex. However, the cost of construction, operations, and maintenance for underground facilities can be greater than structures on the surface. In the end, we must balance total costs, operational efficiencies, and long-term mission compatibility. We intend to begin a National Environmental Policy Act (NEPA) process to evaluate the impact of reasonable alternatives. In parallel with this NEPA process, we plan to complete independent business case assessments of the alternatives.

NATIONAL IGNITION FACILITY PLANS

Question. In November 2005, DOE issued a Record of Decision in the Site-wide Environmental Impact Statement on Livermore Lab Operations that gave the "green light" to construction of a large neutron spectrometer for NIF. The neutron spectrometer does not appear to be reflected in the budget.

What will its ultimate construction costs be? What is its construction schedule and what is its purpose?

Answer. The Department of Energy (DOE) "Site-wide Environmental Impact Statement for Continued Operations of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement" evaluated the environmental impacts of the proposed construction of a large neutron spectrometer for the National Ignition Facility. The Environmental Impact Statement and its Record of Decision do not represent a DOE programmatic decision to proceed with this spectrometer. Alternate approaches have been identified for neutron spectroscopy that do not require the construction of the large neutron spectrometer.

Question. In the same November 2005 Record of Decision, DOE determined it would conduct experiments with plutonium, highly enriched uranium, thorium 232, lithium hydride and other fissionable materials and in NIF. I see no mention of this change in the budget request.

When will the experiments with plutonium begin and when will the experiments with the other new materials begin?

Answer. The Department of Energy "Site-wide Environmental Impact Statement for Continued Operations of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement" evaluated the environmental impacts of the proposed use of plutonium, other fissile materials, fissionable materials, and lithium hydride in experiments at the National Ignition Facility. The Record of Decision provides appropriate National Environmental Policy Act analysis should the National Nuclear Security Administration decide at a later date whether to perform experiments with some or all of these materials. There is a proposal under consideration to conduct experiments with milligram quantities of specially prepared plutonium. In addition, non-ignition experiments with lithium hydride have also been proposed. If there were a programmatic decision to conduct these experiments, they would begin around 2012. None of these experiments requires modification of the chamber and do not represent any additional cost beyond the planned experimental budget for 2012.

Question. The Final Site-wide Environmental Impact Statement on Livermore Lab Operations mentioned that the NIF design would need to be modified to accommodate the plutonium experiments, in particular.

When will these modifications begin and when will they be complete?

Answer. The Department of Energy (DOE) "Site-wide Environmental Impact Statement for Continued Operations of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement" evaluated the environmental impacts of the proposed use of plutonium, and other new materials (e.g., highly enriched uranium, thorium-232, lithium hydride and other fissionable materials). The Environmental Impact Statement and its Record of Decision do not represent a DOE programmatic decision to proceed with these experiments. There is a proposal to begin experiments with small quantities of specially prepared plutonium in fiscal year 2012. In addition, non-ignition experiments with lithium hydride have also been proposed. If there were a programmatic decision to conduct these experiments, they would begin around 2012. None of these experiments requires modification of the chamber and do not represent any additional cost beyond the planned experimental budget for 2012.

Question. What is the approximate cost of modifying NIF to conduct these experiments?

Answer. The Department of Energy (DOE) "Site-wide Environmental Impact Statement for Continued Operations of Lawrence Livermore National Laboratory

and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement" evaluated the environmental impacts of the proposed uses of plutonium, and other new materials (e.g., highly enriched uranium, thorium–232, lithium hydride and other fissionable materials). The Environmental Impact Statement and its Record of Decision do not represent a DOE programmatic decision to proceed with these experiments. There is a proposal to begin experiments with small quantities of specially prepared plutonium in fiscal year 2012. Planned contamination control measures for other National Ignition Facility materials (e.g., beryllium, depleted uranium, activated metal particulate, and tritium) will be adequate to manage the use of specially prepared plutonium. In addition, non-ignition experiments with lithium hydride have also been proposed. If there were a programmatic decision to conduct these experiments, they would begin around 2012. None of these experiments requires modification of the chamber and do not represent any additional cost beyond the planned experimental budget for 2012.

Question. What will conducting experiments with plutonium add to the NIF operating costs and what impacts will the other radioactive material have on NIF costs? Are these included in the budget? If so, where—what about in fiscal year 2008–2011?

Answer. For the proposed experiments with specially prepared plutonium, no special modifications to the National Ignition Facility (NIF) chamber would be needed. Planned contamination control measures for use of other NIF materials (e.g., beryllium, depleted uranium, activated metal particulate, and tritium) will be adequate to manage the use of specially prepared plutonium. There are no additional operating costs to conduct these experiments.

The Department of Energy "Site-wide Environmental Impact Statement for Continued Operations of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement" evaluated the environmental impacts of the proposed use of plutonium, other fissile materials, fissionable materials, and lithium hydride in experiments at NIF. The Record of Decision provides appropriate National Environmental Policy Act analysis should the National Nuclear Security Administration decide at a later date whether to perform experiments with some or all of these materials. There is a proposal under consideration to conduct experiments with milligram quantities of specially prepared plutonium. In addition, non-ignition experiments with lithium hydride have also been proposed. If there were a programmatic decision to conduct these experiments, they would begin around 2012. None of these experiments requires modification of the chamber and do not represent any additional cost beyond the planned experimental budget for 2012.

DEFENSE NUCLEAR FACILITIES SAFETY BOARD ACTIVE CONFINEMENT VENTILATION

Question. I understand the DNFSB is pushing the Department to deploy active confinement ventilation systems for all Hazard Category 2 and 3 facilities.

I understand by applying this technology, at all DOE/NNSA facilities would be extremely expensive. Does the Department have a cost estimate for such retrofits?

Answer. The Department of Energy (DOE) has developed a set of Evaluation Guidelines (February 2006) to review the efficacy of existing ventilation systems for applicable facilities across the Complex (some of which are active and some passive) to assess their performance attributes subsequent to hypothetical accident conditions. DOE intends to apply these Evaluation Guidelines in the near future. From the evaluations attendant to the Defense Nuclear Facilities Safety Board recommendation, DOE would be able to determine what, if any, modifications to ventilation systems might be required and what their costs would be. These data are not currently available.

Question. Has this request by the DNFSB adversely impacted any current projects?

Answer. No modifications to any facility have yet been made pursuant to the Defense Nuclear Facilities Safety Board recommendation concerning active confinement and no facility has been significantly impacted by the recommendation.

Question. Is this active ventilation systems fool-proof?

Answer. No, active ventilation systems are not fool-proof. The utility of an active system depends upon its active components, such as fans, and the passive components, like filters, working properly in the applicable conditions.

RELIABLE REPLACEMENT WARHEAD—AGENT FOR CHANGE

Question. The NNSA fiscal year 2007 budget request continues to support the current Life Extension Programs while the Reliable Replacement Warhead (RRW) stud-

ies are completed. The RRW program has the potential to serve as a means to transform the stockpile.

Please explain the timeframe for integration of the RRW program into the Overall plan for Life Extension.

Answer. Two design teams that are being led by our nuclear weapons laboratories—one from Los Alamos National Laboratory and one from Lawrence Livermore National Laboratory, both supported by the production agencies and Sandia National Laboratories—are engaged in a Reliable Replacement Warhead (RRW) design competition that will be completed later this year (November 2006). Upon favorable completion of the current study, we will work with the Department of Defense (DOD) to establish an RRW strategy as the "enabler" for stockpile transformation. This will include establishing an RRW-based stockpile plan before the end of 2007. The plan would also define the number of legacy warheads of specific types that are processed through life-extension programs. If RRW concepts are feasible and benefits consistent with expectations, we will seek authorization to proceed to engineering development and production consistent with a Nuclear Weapon Stockpile Memorandum signed by the President and the Joint DOD-National Nuclear Security Administration Requirements Planning Documents as approved by the Nuclear Weapons Council.

NNSA VACANCIES

Question. I have continued to observe the number of "vacant" and "acting" positions within the NNSA and the apparent difficulty in attracting suitable candidates.

What is the plan to address this shortfall in staffing and leadership for these critical programs?

Answer. NNSA did have a number of "vacant" positions, but has closed that gap considerably. In fact, NNSA's critical positions are over 98 percent filled. Consequently, NNSA does not now have a serious staffing shortfall in leadership or most other critical positions. NNSA has an aggressive approach and comprehensive programs of recruitment and retention to ensure that we do not encounter critical staffing and leadership shortfalls in the future. NNSA has occasional difficulty in filling positions in highly select circumstances, such as at remote locations like Los Alamos, New Mexico, or when seeking highly selective technical skills such as facility safety representatives, contracting officers, and computer scientists. Overall, NNSA is not experiencing difficulty in attracting and retaining highly qualified candidates to fill critical skills and mission-essential positions.

With respect to a number of "acting" positions, NNSA is moving as quickly as possible to recruit the best possible talent to fill these key executive positions. For example, NNSA just selected the new Associate Deputy Administrator for Fissile Materials Disposition, and is now close to filling several other "acting" executive positions at Headquarters.

We have made major innovations and improvements in NNSA's human capital management programs the past 3 years. These innovations cover the Administrator's statutory excepted service technical hiring authority and a complementary pay-for-performance system; an NNSA-wide performance management and recognition system; a merit promotion plan; and various programs of monetary incentives relating to recruitment and retention, including a student loan repayment program. Last year, we developed and instituted a Future Leaders Program to hire and develop entry-level technical, project management, and business talent. The first class of 30 interns proved to be a success beyond our most optimistic expectations, and we have just completed recruitment of a second class of 30 talented interns. Just recently, we inaugurated an enterprise-wide workforce analysis and planning process to inventory our current skills profile and to better identify near- and long-term staffing trends and skill needs.

With respect to addressing our selective and occasional staffing difficulties, we have streamlined our hiring processes, making greater use of automation, devising better marketing strategies and recruiting tools, and encouraging greater managerial involvement in candidate evaluation and selection. We are making maximum use of government-wide recruitment incentives, and exploring the use of OPM's competitive examination innovations, such as category-ranking procedures. Meanwhile, NNSA's excepted service employment and pay-for-performance system has allowed us to successfully compete with the private sector for many top technical workers, though not in every instance to be sure, as implied by your next question. And as NNSA has made full use of the Administrator's existing excepted service hiring and pay authorities, we are now considering alternative ways to build on and augment our previous successes.

Question. How is the NNSA tapping into the skills at the national laboratories to address shortfalls?

Answer. NNSA avails itself of the outstanding technical talent in our national laboratories in three primary ways, through IPA assignments, M&O contractor details, and consultant appointments. The IPA and M&O detail mechanisms are used to retain the services of current laboratory employees, and these mechanisms are used frequently to retain the services of top laboratory talent. For example, about 60 laboratory employees are currently on M&O details to NNSA, the number of laboratory employees on detail to NNSA usually fluctuating between 60 and 85 employees from month to month. There are four laboratory employees currently on IPAs to NNSA. Additionally, NNSA occasionally retains the services of retired laboratory employees through consultant appointments.

Senior laboratory employees command salaries that generally exceed Federal pay levels, which tends to negate NNSA's ability to recruit laboratory employees to fill permanent Federal positions. On the other hand, use of the Administrator's excepted service hiring and pay authorities has recently bolstered NNSA's ability to attract top technical talent, not only from the laboratories, but also from industry and the universities.

Question. Are Alternative Personnel Systems that provide incentives for specialized skills through performance-based pay being considered for potential implementation?

Answer. There is no question that an agency's staffing and recruitment effectiveness can be improved through various appointment and pay features of an alternative personnel system. Toward that end, NNSA designed, developed, and implemented an alternative excepted service personnel system to implement the hiring and pay authorities granted to the Administrator by the NNSA Act. We have used the Administrator's entire statutory allocation of 300 scientific and engineering positions. In addition, we have made extensive use of large segments of the Department's two excepted service authorities and will continue to use the remaining Departmental excepted service authorities. We will also assess the need for potential additional authorities and develop detailed plans for consideration of the Congress in the appropriate out-year budget submissions.

Question. Can you comment on the success of this new governance model and any lessons that you've learned in implementation?

Answer. NNSA view is that this "model" contract has provided new tools that have been and will continue to be beneficial to both the Government and the contractor. We are performing oversight with fewer Federal employees and NNSA has seen improvement in Sandia's performance as a result of this new governance model.

In the last 2 years, Sandia has developed and implemented a Contractor Assurance System throughout the laboratory including a corporate self-assessment program, corrective action and tracking program, corporate issues tracking program, benchmarking processes, and performance metrics for key laboratory operations. When combined these processes and systems allow both Sandia and NNSA to have greater insight into operational and program performance enabling them to be able to identify and correct problems at lower levels before they become systemic.

We have also seen improvement in Sandia's capitalization on private sector experience. Sandia has now formalized a process to ensure that lessons learned are implemented. Sandia has sought and achieved certification against industry standards. An example is their ISO 9001 procurement system certification. Sandia is currently in the process of seeking ISO 9001 certification of their Contractor Assurance System, which they call the Integrated Laboratory Management System. Sandia also completed a benchmarking study of their G&A by Hackett.

The model contract has increased contractor accountability. The model contract features of Fixed Fee for the stockpile work, tied to the Award Term Incentive, and Incentive Fee are useful to the Government. We have learned that the award term (which Sandia did not earn for fiscal year 2005) is an extremely powerful tool to focus a contractor's attention. The model contract drives communication, efficiencies, and accountability better than the previous contract utilizing a fixed fee structure. We have noted increased involvement by the parent entity, Lockheed Martin and the Sandia Corporation's Board of Directors. The Board is very active with committees on CAS/ILMS or governance and Security and Safety which Sandia VPs report to routinely. The model is that once ILMS/CAS is up and running this form of governance will be relied on to change oversight.

Finally, through this contract, NNSA has been able to realize cost savings which have been applied to Laboratory operations. Examples of completed projects include:

—enhancing classified network ($2 million);

—cleaning up beryllium contamination ($2 million);

—Implementation of a new JTA development process with a projected reduction of cycle time of 50 percent (6 years to 3 years); and,
—W80 Neutron Tube Development Welding Cell value stream mapping that realized 96 percent reduction in cycle time.

We have learned some valuable lessons in our first 2 years. The first is that it has been hard to redefine the contractor and Government relationship. Both sides had grown accustomed to having the Government telling the contractor not only the "what" but the "how" with old habits being difficult to change. Secondly, redefining the way in which the Government operates has not been easy for either party. When NNSA was established we eliminated the Operations Offices and redefined the roles and responsibilities of the Site Office and Headquarters. This change has been difficult but we are gaining momentum and there is evidence that we are being more thoughtful in our interactions and direction of the contractors. This new structure has also allowed the Site Offices to focus on improving operations at our facilities to include security and safety. Over the last 3 years at Sandia this has resulted in significant improvement in security operations and smaller improvements have been achieved in the safety arena. The NNSA Leadership Coalition, consisting of senior mangers from Headquarters, the Service Center, and Site Offices are working together and are speaking with one voice. This has resulted in NNSA providing more clear and concise direction.

LANL—NEW CONTRACT COSTS

Question. Mr. D'Agostino, you were the selection officer for the Los Alamos contract award. You selected the Los Alamos National Security, LLC—a partnership between Bechtel, University of California, BWTX and Washington Group. These are all very well-qualified groups. However, this contract is much more expensive than the previous contract and I suspect you were attempting to attract the best talent with a much higher fee.

This contract also requires the Lab to pay Gross Receipts Tax to the State ($75 million). I suspect there are several other cost increases that add to the bottom-line operations of the lab. Unfortunately, the budget doesn't reflect an increase to accommodate these added costs. All of these costs will come out of R&D budgets and lab operations that we appropriate.

Do you know how much more it will cost to operate the new contract? What impact will this have on the programs?

Answer. Under the new contract, NNSA could pay Los Alamos National Security, LLC (LANS) significantly more fee than it pays the University of California to manage the laboratory if LANS lives up to the performance incentives and contractor assurance initiatives LANS proposed in its winning proposal. In the first year, the difference could be in the neighborhood of $66 million and varies somewhat over the base term of the contract because LANS proposed a lesser fee in the out-years than in the first few years.

LANS and the New Mexico Department of Revenue and Taxation have not finalized LANS payment schedule and procedures and, therefore, it is not possible to respond precisely with respect to the New Mexico Gross Receipts Tax. It will not be on the order of $75 million more than at present because the major for-profit subcontractors already pay gross receipts tax and your $75 million figure does not take that into account.

In addition, there will be additional set-up expenditures to establish and maintain the pension plans and benefits arrangement for LANS, a private entity; they are, therefore, different than the system expenses associated with the pension and benefits provided by the University of California.

NNSA expects minimal impact on program performance because of the factors enumerated in response to the next question.

Question. Where will the new contractor find the funding to offset the increased costs without negatively impacting the program?

Answer. Based on the LANS proposal, its multi-year strategy for continuous improvement and its plan for parent organization oversight and assistance, NNSA is confident that LANS will offset much of the new expense through savings realized through better, more disciplined and more streamlined operations. For example, through footprint reduction LANS is expected to reduce operation and maintenance costs. Through its integrated project teams, LANS is expected to reduce the cost of operating facilities. By improving procurement and financial management overall, LANS is expected to realize significant savings both in the actual business operation and in the program supported by that business operation.

NNSA anticipates "locking in" the promises of better and more cost-effective performance through the objectives and measures in the annual performance evaluation plan against which LANS must perform to earn a significant portion of its fee.

Question. Do you have sense as to which programs might be impacted? Will this impact jobs?

Answer. NNSA does not know at present on which (if any) programs there may be an impact as a result of the changeover to LANS. We remain hopeful that there will be little to no impact on the deliverables NNSA needs within its mission requirements.

There could be some impact on jobs, the extent of which is not certain at this time. This is because some current employees may choose to retire and not seek employment with LANS, may retire and will not be re-hired by LANS or may resign and seek employment elsewhere. NNSA does not expect this number to be significant given the "substantially equivalent" benefits and compensation offers NNSA directed to be placed in the transition.

NNSA also believes that, over time, LANS' transformation of the laboratory could change the nature of some jobs currently performed at the laboratory as it develops science and programs to address the National Security needs of the future. It is not certain whether, or in which direction, it may affect the number of jobs at the laboratory as NNSA insists on a forward-looking and dynamic Los Alamos National Lab.

Question. How much does the NNSA invest in developing technology that can be used as early warning detection, or as a security deterrent?

Answer. In addition to the technologies that are deployed at each site with operational funds, the National Nuclear Security Administration spends $8.0 million per year on a program dedicated to security technology deployment. These technologies cover the entire range of security requirements, from early warning and detection to armor-piercing ammunition, and from new communications systems to Classified Removable Electronic Media accounting systems.

Question. How effective has the NNSA been in the deployment of this technology and what can be done from a technology standpoint to reverse the growing trend line in security costs?

Answer. The National Nuclear Security Administration is effective at deploying innovative security technologies. The trend line in security costs will be held down as much as possible with these technologies. But the return on investment is generally not immediately evident—it takes several years for a new technology to start reducing operational costs. In addition, the Design Basis Threat policy may continue to drive the overall trend line upwards, in spite of the savings from technology deployments.

Question. Why have these processes taken so long? Do you lack confidence in the incumbent—who has been the subject of numerous critical reports by the IG?

Answer. Proposals are currently being reviewed by the Source Evaluation Board to select a suitable candidate for the security contracts at Y–12 and the Nevada Test Site. Currently, the Y–12 proposal is being reviewed by the Source Evaluation Board. The Nevada Test Site proposal has been sent back to the Source Evaluation Board for further analysis. The Federal Acquisition Regulation parts 3.104–3 "Statutory and related prohibitions, restrictions, and requirements," and 3.104–4 "Disclosure, protection, and marking of contractor bid or proposal information and source selection information," does not allow the Department to provide any specific information in relation to the selection of these contracts.

Question. Is there insufficient competition? Are you uncertain of the security mission at these sites?

Answer. Proposals are currently being reviewed by the Source Evaluation Board to select a suitable candidate for the security contracts at Y–12 and the Nevada Test Site. The Federal Acquisition Regulation parts 3.104–3 "Statutory and related prohibitions, restrictions, and requirements," and 3.104–4 "Disclosure, protection, and marking of contractor bid or proposal information and source selection information," does not allow the Department to provide any specific information in relation to the selection of these contracts.

Question. Will you update me on measures taken to improve security performance at the site?

Answer. The security posture at the Nevada Test Site has undergone a complete transformation. We have brought on board a highly qualified Federal security manager and nuclear security professionals to oversee the build-up of physical security measures at the site. The physical security and protective force upgrades being deployed are extensive and strong. Over the past year we have increased the size, training, and equipment of the protective force. These improvements include the procurement of additional armored vehicles and improved firepower in the form of

heavy machine guns, grenade launchers, and armor piercing ammunition. To enhance our adversary detection capabilities we are installing state-of-the-art electronic surveillance and video assessment systems. A major element of our upgrade plan involves the fielding of a Special Response Team (SRT) capability whose training and equipment rival those of a major city SWAT team. The combined effect of these upgrades is significant, making the site one of the most heavily defended locations in the Nation. We will continue to closely monitor these upgrades and the performance of the protective forces at the Nevada Test Site.

Question. Why should the public have confidence that change has occurred, given Admiral Mies' finding that DOE/NNSA's ability to "to evaluate findings, assess underlying root causes, analyze alternative courses of action, formulate appropriate corrective action, gain approval, and effectively implement change" is "weak to nonexistent"?

Answer. In the year-and-a-half since the Deputy Secretary referred to "recent significant physical security performance problems at Nevada Test Site . . ." significant progress has been made. To confirm this progress, the Administrator for the National Nuclear Security Administration requested the Department of Energy, Office of Independent Oversight, conduct a follow-up to its 2004 inspection. That follow-up was completed in September 2005, and the Office of Independent Oversight reported that "performance has noticeably improved." Specifically, "significant improvements over the past year include positive management initiatives, appropriate skills and training, robust protection at the Device Assembly Facility, and effective protection of classified matter."

Question. How much is the complex proposing to spend on physical security in 2007?

Answer. The fiscal year 2007 Defense Nuclear Security budget is $665.7 million. Of this amount, $491.6 million is for "physical security" programs.

Question. Is this security cost driven by the number of sites in the complex, or the number of facilities within each site, or the amount of SNM at each site?

Answer. All three factors contribute to the level of security costs. At sites such as Pantex and Y–12 the size of the special nuclear material holdings and the geographic spread of the storage and processing facilities drives up the cost of security, as protective forces are needed to control large areas of the site. At the remaining National Nuclear Security Administration sites, we have been able to effect on-site consolidation that has significantly reduced the cost of protecting special nuclear material, the best example of this is the removal of Category I/II special nuclear material from Los Alamos National Lab's TA–18.

Question. What are the annual security costs at Kansas City, LLNL, LANL, at Sandia Livermore and Sandia Albuquerque, at Savannah River, and at Y–12?

Answer. Fiscal year 2007 Defense Nuclear Security allocations by site are:

[In millions of dollars]

	Amount
Kansas City	11.3
Lawrence Livermore	83.9
Los Alamos	113.7
Sandia	70.9
Savannah River	11.5
Y–12	132.1

Question. Would the security costs at any given site go down if they did not have SNM at that site?

Answer. While each site is unique, the security costs for protecting special nuclear material ranges between 50 percent to 70 percent of the site security budget. The National Nuclear Security Administration is aggressively pursuing further consolidation of special nuclear material, both as a means for reducing security costs, but also to reduce the overall risks posed by this material.

RUSSIAN HIGHLY ENRICHED URANIUM DEAL

Question. If the Russian Suspension Agreement is modified or allowed to expire resulting in significantly increased amounts of Russian low enriched uranium entering the U.S. market:

—1. It is expected to have a serious impact on the financing for the $1.4 billion privately funded LES National Enrichment Facility by creating a significant negative market impact from the flooding of the United States with low enriched uranium;

—2. The financial community will likely raise serious concerns regarding the long-term viability of the LES project if they feel the market would be impacted by the expiration of the Russian Suspension Agreement;
—3. A similar negative impact is expected on USEC's ability to build and operate the American Centrifuge Facility; and
—4. It could prevent the nuclear industry from having a domestic source of enriched uranium if the LES and USEC facilities are not built because of this negative market impact.

Please provide the committee with the position of the NNSA on the impact the modification or expiration of the Russian Suspension Agreement resulting in the significant increase of Russian low enriched uranium entering the U.S. market will likely have on the ability to build and operate the new LES and USEC facilities and the impact on the future U.S. domestic enrichment industry of large amounts of Russian low enriched uranium entering the U.S. market.

Answer. DOE/NNSA supports the deployment of advanced centrifuge uranium enrichment facilities in the United States—as was emphasized in a DOE letter of July 25, 2002, to the Nuclear Regulatory Commission—and believes that such facilities are needed for both energy security and national security purposes. The letter further stated that, "The Department firmly believes that there is sufficient domestic demand to support multiple domestic enrichers and that competition is important to maintain a healthy industry." I am aware of no circumstance that has changed or diminished that statement and I believe it is as appropriate today as it was in 2002.

Let me assure you that I share your concern on the fragility of the current U.S. uranium enrichment infrastructure, and the need to modernize and expand U.S. uranium enrichment capabilities. I recognize that the decisions by USEC to build the American Centrifuge Facility and by LES to build the National Enrichment Facility were based on market projections that included continuation of the Russian Suspension Agreement. It is clear that terminating or drastically modifying the Suspension Agreement at this critical time could undermine these ongoing plans to establish a modern, efficient and competitive uranium enrichment industry in the United States.

Although NNSA is not a party of record in the Department of Commerce's Sunset Review of the Suspension Agreement, NNSA has made clear its support for continuing the Suspension Agreement in the Interagency. NNSA fully supports Commerce's Preliminary Results of the Sunset Review of the Suspension Agreement reported in the Federal Register on Monday, April 3, 2006, which find that revocation of the Suspension Agreement would likely lead to a recurrence of dumping.

I would like to express my concern for the 1993 Highly Enriched Uranium Purchase Agreement (the HEU Agreement), which is eliminating 500 metric tons of excess Russian HEU from dismantled Russian nuclear weapons by downblending it for use as fuel for U.S. power reactors. The Suspension Agreement has been the legal basis by which Russian low enriched uranium has entered the U.S. market duty free. Unilateral Russian termination of the Suspension Agreement would automatically trigger 115 percent antidumping duties on the HEU Agreement imports from Russia, immediately threatening the economic viability of the HEU Agreement, which supplies half of the nuclear fuel for U.S. power reactors. An interagency review is underway to address this concern; any proposed modification of the Suspension Agreement would require careful review.

STATUS OF MOX

Question. I am surprised by the lack of detail in your statement regarding MOX. Your statement makes no mention of the fact that the Department is rebaselining the entire program and cost estimates have increased to over $3 billion. It makes no mention of the steps the Department is taking to respond to the DOE IG Report, which found the Department lacks sufficient contractor oversight, which has contributed to the increased costs.

It also fails to mention that the Russians have made it clear that they will no longer pay for the operations of the MOX facility if they are limited to using the fuel in light water reactors, in the same manner as United States. Apparently the Russians have made unilateral decision that their only interest is in fast reactors.

Finally, I am becoming increasingly frustrated that the Russians continue to stall the final approval of the liability agreement. I believe the Russians are now the biggest liability facing the program and we should sever the link between the construction projects.

Since your statement fails to mention any of these issues can you please update the committee? What are you doing to improve the contract oversight and reign in the contractor?

Answer. I share your frustration over the fact that the Russian Government has not yet signed the protocol covering liability protection for the plutonium disposition program. Despite continued delays, we have been assured repeatedly by officials from the Russian Ministry of Foreign Affairs and the Russian Atomic Energy Agency that there are no substantive problems with the language that was agreed to in July 2005, but rather it is a question of the protocol undergoing a complete Russian interagency review that has been moving more slowly than expected. We continue to believe that the protocol will be signed shortly.

The Russian Government has repeatedly stated that it remains committed to the 2000 U.S.-Russian Plutonium Management and Disposition Agreement, which obligates both countries to dispose of their plutonium by using it as mixed oxide (MOX) fuel in nuclear reactors. The agreement states that any nuclear reactor agreed to by both parties may be used for disposition. While Russian Government officials recently reaffirmed its willingness to proceed with plutonium disposition in light water reactors if the international community would provide full funding for the program, they also expressed their desire to explore the use of advanced reactors. In this regard, they agreed to begin early disposition of limited quantities of plutonium in Russia's existing fast reactor well before the United States could begin disposition of its plutonium, demonstrating their commitment to dispose of their surplus plutonium.

As a result, we are moving forward with construction of the U.S. MOX facility at the Savannah River Site this year. To prepare for this effort, we have already taken a number of steps to improve the management of the MOX facility project. These include incorporating performance incentives in future contract negotiations, improving monthly project reports, controlling contractor spending, and reviewing contractor performance. Now that the planned date for the start of construction of the MOX facility has been set, the project cost and schedule baseline is currently undergoing an independent review and validation prior to the start of construction. This will enable us to track project performance against the baseline and minimize the possibility of future cost overruns. Plans are also underway to hire a qualified MOX Federal Project Director and to streamline the organizational structure of the project.

RADIOACTIVE SOURCES

Question. What is NNSA doing to ensure that both domestic and foreign radioactive materials are not used in a malicious manner against the United States?

Answer. NNSA's Office of Global Radiological Threat Reduction works in both the United States and overseas to secure, consolidate and/or remove high powered (i.e., suitable for use in an effective radiological dispersal device (RDD)) and vulnerable radioactive materials.

The U.S. Radiological Threat Reduction (USRTR) program, also known as the Off-Site Source Recovery Program, has recovered over 12,000 excess and unwanted sources in the United States, containing over 160,000 curies of radioactivity. In addition, the USRTR program is beginning a Source Security Program, which provides security assessments of facilities, as well as training for users of high-risk sources.

The International Radiological Threat Reduction (IRTR) program works in over 40 countries with international and regional organizations to secure radioactive materials, transfer detection equipment, train regulators and police, and support international conferences and training for foreign government officials on best practices for security of radiological sources.

Question. Your agency, DHS, NRC and other agencies are involved to some extent in the security of high-risk radioactive materials that could be used for RDDs. Should there be one lead agency which takes overall coordinating responsibility for ensuring that radioactive materials are not used maliciously?

Answer. On December 13, 2003, the President issued Homeland Security Presidential Directive 7. Item 29 of this directive states that the Secretary of Homeland Security will continue to work with the Nuclear Regulatory Commission and, as appropriate, the Department of Energy, to ensure the necessary protection of nuclear (including radiological) materials in medical, industrial, and academic settings and facilities that fabricate nuclear fuel and the transportation, storage, and disposal of nuclear materials and waste.

Question. What has been NNSA's budget allocation for both domestic and international programs for the past 3 years to address the RDD issues? Do you feel that NNSA has adequate, dedicated resources to address these issues?

Answer.

Global Radiological Threat Reduction Program	Fiscal Year 2004	Fiscal Year 2005	Fiscal Year 2006
International RTR	$27,000	$24,800	$24,078
U.S. RTR	5,400	7,540	12,750

Funding over the past 3 years has permitted the Office of Global Radiological Threat Reduction to accelerate recoveries of orphaned sources in the United States and expand our international program beyond Russia and the Former Soviet Republics.

Question. What measures has NNSA taken to mitigate the consequences of an RDD attack and to respond to such an attack if one should occur?

Answer. The core focus areas of the Office of Global Radiological Threat Reduction are: (1) improving radioactive material security at the "first line of defense", i.e., the facilities where sources currently reside, beyond our borders; and (2) recovering disused sources in the United States, so as to mitigate RDD use in an attack. Additionally, the program works in concert with NRC and DHS domestically to address security of in-use sources.

Question. What is the relative priority you would assign to taking measures to ensure that an RDD attack does not occur against the United States?

Answer. Reducing the threat of a radiological dispersal device attack is a high priority for NNSA, DOE, and the Bush administration. This administration has done more than any other to secure radiological materials against their possible use by terrorists in a radiological dispersal device (RDD or "dirty bomb"). The 2003 International Conference on Security of Radioactive Sources highlighted the need for radioactive source security and DOE/NNSA's Office of Global Radiological Threat Reduction is a response to that need. However, the threat posed by weapons-useable nuclear materials in an improvised nuclear device is considered a higher priority than the RDD threat because of the dramatically greater consequences associated with a nuclear explosion. This does not negate the severity of the RDD threat, which remains a high priority for DOE/NNSA.

Question. Given the severe social, economic and psychological consequences of an RDD and the greater likelihood for an RDD attack to occur over an attack with a nuclear explosive, what can be done to accelerate NNSA's efforts to protect against an RDD attack?

Answer. The Office of Global Radiological Threat Reduction has qualified and dedicated Federal and national laboratory resources working both overseas and in the United States to address the RDD threat. We have established and are exercising our interagency and international liaisons to share best practices and the "security perspective" domestically and internationally. Current and out-year funding will support commitments made in over 40 established project countries and the United States.

Question. In light of the mass evacuation, property damage and severe economic burden resulting from Hurricanes Rita and Katrina, how would you compare such natural disasters to an RDD attack?

Answer. Comparing the effects of a natural disaster and those of an RDD attack is difficult. Just as it is difficult to predict the damage resulting from a natural disaster, it is equally difficult to predict the relative strength and dispersal patterns of an RDD attack. Some types of damage are likely to be similar: displaced populations, economic losses, environmental damage, social panic and possible societal breakdown. Damage from an RDD attack, however, could adversely impact one additional element—denial of property. Denial of property would last until an area could be decontaminated, potentially a technically and financially demanding task. Additionally, the health effects of an RDD attack could include substantial increases in long-term cancer rates. Finally, the psychological impact and widespread fear resulting from a radiation attack can is difficult to estimate.

Question. How do other countries perceive the consequences of an RDD? Should we be building more effective partnerships with these countries such that they take an active role to ensure that an RDD attack does not occur?

Answer. The threat posed by the use of a radiological dispersal devise (RDD) has only recently come to the attention of the international community. The international community, led by the United States, our G–8 partners, and international organizations such as the IAEA, has convened three international conferences to address the safety and security of radioactive materials around the world. Fostering and maintaining partnerships with other countries is essential due to the widespread use of radiological materials in applications ranging from agriculture to oil exploration. The International Radiological Threat Reduction (IRTR) program has

developed Regional Radiological Security Partnerships in Southeast Asia (in sponsorship with Australia) and South America and is fostering burgeoning relationships in Africa to address the security of radioactive materials in those regions.

Question. What can be done to get other countries to allocate their resources to address the RDD problem?

Answer. Recent international conferences have highlighted the issue of the security of radioactive materials and are key to convincing other countries to allocate resources to address the RDD threat. Additionally, the International Radiological Threat Reduction (IRTR) program has developed Regional Radiological Security Partnerships to address the security of radioactive materials worldwide. A notable success has been our Regional Radiological Security Partnerships that was developed in Southeast Asia in sponsorship with Australia. This partnership supports NNSA and IAEA objectives to improve the security of high-risk radioactive materials. Australia has committed monetary resources for this cooperative threat reduction effort. Furthermore, as an integral part of our bilateral cooperative projects, the IRTR program addresses sustainability of the security systems it provides and works with countries to ensure that security costs are integrated into operating budgets.

Question. What is NNSA doing to enlist support from other international organizations, such as the IAEA and Europol, to address the RDD problem?

Answer. Although NNSA has no interactions with Europol, we have developed strong cooperative relationships with both the IAEA and the International Criminal Police Organization (Interpol) to address the RDD problem.

NNSA's International Radiological Threat Reduction (IRTR) program has been engaged in cooperative projects to prevent radiological terrorism with Interpol since 2003. This cooperation includes assisting Interpol to develop analytical reports that characterize the nature of thefts and diversions of radioactive materials, and equipping and training front line police officers to enable them to detect and mitigate radiological security threats. This training allows these officers to remain competent in the use of this equipment over an extended period of time.

The IRTR program cooperates extremely well with the IAEA ranging from multinational conferences to in-country support on topics ranging from regulatory support to physical protection. The Office of Global Radiological Threat Reduction continues to provide the IAEA's Nuclear Security Fund significant donor support through extra-budgetary contributions. To date, GRTR has contributed approximately $11 million for our joint activities.

Question. I am aware that NNSA has worked in over 40 countries to help ensure that their high-risk radioactive sources are secure. What is being done to ensure that these security measures will remain in use and effective for a period well beyond the length of the assistance that NNSA is providing?

Answer. It is critical to ensure the continued operation and maintenance of security systems and procedures after the work of the Office of Global Radiological Threat Reduction is complete. One major aspect of our project planning and execution overseas is developing a sustainable physical protection system and incorporating security into host country practices and foreign facility operational budgets. Designing an effective and sustainable security system requires working directly with national regulators and site personnel to make sure they understand and evaluate the full gamut of operational considerations that result from the installation of a physical security system.

LABORATORY DIRECTED RESEARCH AND DEVELOPMENT

Question. What does the budget propose in for the LDRD account?

Answer. Although LDRD levels are not proposed specifically in the annual budget requests, the NNSA supports continuing funding for the LDRD programs at its National Laboratories.

In accordance with guidance in the Conference Report to accompany the Energy and Water Development Appropriations Act, 2006, (H. Rept. No. 109–275 (2005)), and departmental policy, NNSA required its Laboratories to modify cost accounting procedures and apply overhead charges to the LDRD program. Implementing these changes while sustaining the historical funding levels for LDRD requires a funding rate of up to 8 percent. Our objective is to sustain the funding that is applied directly to scientific and technical work so the changes described above should not decrease the effective level of research conducted under the LDRD program or increase the cost of DOE programs or work for non-DOE customers.

The NNSA continues to believe the recommendations of the Packard Commission and Galvin Commission that a robust LDRD program is essential to the scientific

and technical vitality of the National Laboratories and their long-term contributions to national security.

LABORATORY DIRECTED RESEARCH AND DEVELOPMENT

Question. Does the budget contemplate any reforms to this program?

Answer. The NNSA and the National Laboratories have implemented the changes required to apply all Laboratory overhead charges to the LDRD program in fiscal year 2006. There is no specific initiative under way that would result in further changes to the LDRD program to be implemented in the near future. The NNSA and its National Laboratories regularly review the LDRD program, how it operates, and the science and technology it produces, to improve the program and its value to the Nation. If this process identifies beneficial reforms within the current constraints for the LDRD program, then the NNSA would work with the Laboratories to implement them.

CONCLUSION OF HEARINGS

Senator DOMENICI. We stand recessed until the Chair calls another meeting.

[Whereupon, at 3:08 p.m., Thursday, April 6, the hearings were concluded, and the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER, AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 2007

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

NONDEPARTMENTAL WITNESSES

[CLERK'S NOTE.—At the direction of the subcommittee chairman, the following statements received by the subcommittee are made part of the hearing record on the Fiscal Year 2007 Energy and Water Development Appropriations Act.]

DEPARTMENT OF DEFENSE—CIVIL

DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS

PREPARED STATEMENT OF THE CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

The United States Army Corps of Engineers Tropicana and Flamingo Washes Flood Control Project, Las Vegas, Nevada.—$15,000,000, Construction appropriations, which includes appropriations for work performed pursuant to Section 211 of the Water Resources Development Act of 1996.

Presented herewith is testimony in support of $15,000,000 for the construction appropriation necessary for the U.S. Army Corps of Engineers to continue the Tropicana and Flamingo Washes flood control project in Clark County, Nevada, which includes up to $9,000,000 to reimburse the non-Federal sponsors, Clark County and the Clark County Regional Flood Control District, for work performed in advance of the Federal project pursuant to Section 211 of the Water Resources Development Act (WRDA) of 1996. The President's fiscal year 2007 Civil Works budget request to Congress identifies $12,400,000 for this project. It is imperative that we receive the requested Federal funding to protect residents of the rapidly growing Las Vegas Valley in Southern Nevada from devastating floods.

The Las Vegas Valley continues to experience unprecedented growth. In the past 20+ years, people have moved into our area from all parts of the Nation to seek employment, provide necessary services, retire in the Sunbelt, and become part of this dynamic community. Approximately 6,000 people relocate to the Las Vegas Valley every month of the year. Currently the population exceeds 1.8 million. The latest statistics show that more than 25,000 residential units are built annually. Once all of these factors are combined, the result is that the Las Vegas Valley continues to be one of the fastest-growing metropolitan areas in the Nation.

The Federal project being constructed by the Corps of Engineers (Corps) is designed to collect flood flows from a 174-square mile contributing drainage area. The Corps' project includes three debris basins, five detention basins, 28 miles of primary channels, and a network of lateral collector channels. The debris basins collect flood flows from undeveloped Federal lands at the headwaters of the alluvial fans and trap large bedload debris before it enters the channels and causes erosion damage. The detention basins greatly reduce the magnitude of the flood flows so that the flows can be safely released and conveyed through the urbanized area at nondamaging rates. A primary system of channels collects outflows from the debris and

detention basins and conveys these floodwaters through our urban area. Lateral collector channels, which are funded locally, collect runoff from smaller developed watersheds and deliver it to the primary channels. Since flood flow over the alluvial fans, which ring the Las Vegas Valley, is so unpredictable in terms of the direction it will take during any given flood, all of the components of the Corps' plan are critical.

Torrential rains deluged the Las Vegas Valley the morning of July 8, 1999, causing widespread drainage problems and major damages to public and private properties. Some of the greatest rainfall depths occurred over the southwest portions of the Las Vegas Valley resulting in significant flows in the Tropicana and Flamingo Washes. The runoff from this intense rainfall caused widespread street flooding and record high flows in normally dry washes and flood control facilities. The news media reported two deaths during this flood event, one of which was a drowning in the Flamingo Wash. Damages to public property caused by this storm were estimated at $20,500,000. The President declared Clark County a Federal disaster area on July 19, 1999, recognizing the severity of damages to public and private properties. Significant damages could have been avoided if the Corps' Tropicana and Flamingo Washes Project had been fully implemented. However, those features of the Corps' project that were completed did help to mitigate damages.

On August 19, 2003 another flash flood hit the Las Vegas Valley and damaged hundreds of homes and businesses. Storms of this magnitude only reinforce the need to expeditiously build all flood control projects in the Las Vegas Valley.

In the winter of 2004–2005, the area experienced heavier than normal rainfall amounts. That winter brought twice the area's average annual rainfall causing flooding in along the Virgin and Muddy Rivers in Clark County, Nevada. Several areas in the Las Vegas Valley also experienced drainage problems. The flood control features built as part of the Tropicana and Flamingo Washes Project helped to protect vast areas of our community.

The Feasibility Report for this project was completed in October 1991, and Congressional authorization was included in the WRDA of 1992. The first Federal appropriation to initiate construction of the project became available through the Energy and Water Resources Development Appropriations Bill signed into law by the President in October 1993. The Project Cooperation Agreement (PCA) was fully executed in February 1995. Federal appropriations to date have totaled $269,345,000 (allocations $226.7 million), allowing continued project construction. The total cost of the flood control portion of the project is currently estimated at $336,342,000, higher than originally anticipated primarily due to the delay in Federal appropriations which has resulted in increases in real estate and construction costs.

The local community had constructed certain elements of the Corps' plan prior to the execution of the PCA. These project elements required modifications in order to fit into the Corps' plan and fulfill the need for a "total fan approach" to the flooding problems in the Las Vegas Valley. The work performed by the non-Federal sponsors, construction of Red Rock Detention Basin and Flamingo Detention Basin, has been accounted for in Section 104 credits and totals $9,906,000.

We have already realized some benefits from construction of flood control features on the Federal project. We have removed 18.1 square miles of flood zones from Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps. This was accomplished through the completion of the Red Rock Detention Basin Modifications, the Blue Diamond Detention Basin, and the F–1 and F–2 Debris Basins and Outfall Channels. We anticipate removal of an additional 0.7 square miles of flood zones as a result of recently completed portions of the Federal project and even more removed when the entire project is complete.

Both the Clark County Regional Flood Control District and Clark County are looking forward to the completion of construction of this flood control project in fiscal year 2007.

The non-Federal sponsors are requesting $15,000,000 for both the continued construction and reimbursement to the local sponsors of this project. Funding at this level will allow the Corps of Engineers to complete the construction of the last project feature, the F–4 Debris Basin and Channel.

In order to provide the required flood protection in a timely fashion, the non-Federal sponsors are implementing certain features in advance of the Federal Government pursuant to Section 211 of WRDA 1996. An amendment to the PCA was fully executed on December 17, 1999, that formalizes the provisions of Section 211 of WRDA 1996. Section 211(f) of WRDA 1996 recognized the Tropicana and Flamingo Washes project as one of eight projects in the Nation to demonstrate the potential advantages and effectiveness of non-Federal implementation of Federal flood control projects. The work funded by the non-Federal sponsors and completed is substantial and includes features that were designed by the non-Federal sponsors and con-

structed by either the Federal Government or the non-Federal sponsors. To date, $13.5 million has been reimbursed.

The non-Federal sponsors are requesting up to $9 million of the $15 million for reimbursement under Section 211. This amount is requested in light of the language contained in the fiscal year 2000 Energy and Water Development Bill, Senate Report 106–58, which states in part, "The Committee expects . . . every effort to even out reimbursement payments to lessen future budgetary impacts." The non-Federal sponsors' contributions to the project are for the primary purpose of providing flood protection as quickly as possible.

In summary, the Tropicana and Flamingo Washes project is an important public safety project designed to provide flood protection for one of the fastest growing urban areas in the Nation. We ask that the committee provide the Secretary of the Army with $15 million, in fiscal year 2007, in order to facilitate the completion of construction of this critical flood control project and use up to $9 million of the $15 million to reimburse the non-Federal sponsors the Federal proportionate share of the work completed by the sponsors in advance of the Federal Government.

The committee is aware that flood control measures are a necessary investment required to prevent loss of life and damages to people's homes and businesses. Flood control is a wise investment that will pay for itself by preserving life and property and reducing the probability of repeatedly asking the Federal Government for disaster assistance. Therefore, when balancing the Federal budget, we believe a thorough analysis will show that there is substantial future Federal savings in disaster assistance that supports sufficient appropriations through the Civil Works Budget.

PREPARED STATEMENT OF THE VENTURA PORT DISTRICT

The Ventura Port District respectfully requests that the Congress increase the administration's request from $1,700,000 to $3,370,000 for inclusion in the fiscal year 2007 Energy and Water Development Appropriations Bill for the U.S. Army Corps of Engineers maintenance dredging of the Ventura Harbor Federal channel and sand traps.

BACKGROUND

Ventura Harbor, homeport to 1,500 vessels, is located along the Southern California coastline in the City of San Buenaventura, approximately 60 miles northwest of the City of Los Angeles. The harbor opened in 1963. Annual dredging of the harbor entrance area is necessary in order to assure a navigationally adequate channel. In 1968, the 90th Congress made the harbor a Federal project and committed the U.S. Army Corps of Engineers to the maintenance of the entrance structures and the dredging of the entrance channel and sand traps (Public Law 90–483, section 101).

The harbor presently generates more than $50 million in gross receipts annually. That, of course, translates into thousands of both direct and indirect jobs. A significant portion of those jobs are associated with the commercial fishing industry which landed over 25 million pounds of seafood in 2005 (the harbor is consistently amongst the top ten commercial fishing ports in the United States), and with vessels serving the offshore oil industry. Additionally, the headquarters for the Channel Islands National Park is located within the harbor, and the commercial vessels transporting the nearly 100,000 visitors per year to and from the Park islands offshore, operate out of the harbor. All of the operations of the harbor, particularly those related to commercial fishing, the support boats for the oil industry, and the visitor transport vessels for the Channel Islands National Park are highly dependent upon a navigationally adequate entrance to the harbor.

OPERATIONS AND MAINTENANCE NEEDS

Maintenance Dredging

It is estimated that $3,370,000 will be required to perform the maintenance dredging of the harbor's entrance channel and sand traps during fiscal year 2007. Because of reduced funding in fiscal year 2006 more than 350,000 cubic yards of material was not removed by the Corps of Engineers contractor during the current dredging effort and thus the request is absolutely essential to the continued operation of the harbor in fiscal year 2007.

PREPARED STATEMENT OF THE ARKANSAS RIVER BASIN INTERSTATE COMMITTEE

Mr. Chairman and members of this distinguished committee, my name is Lew Meibergen. I am Chairman of the Board of Johnston Enterprises headquartered in Enid, Oklahoma. It is my honor to serve as Chairman of the Arkansas River Basin Interstate Committee, members of which are appointed by the governors of the great States of Arkansas, Colorado, Kansas, Missouri, and Oklahoma.

In these times of war on terrorism, homeland defense and needed economic recovery, our thanks go to each of you, your staff members and the Congress. Your efforts to protect our Nation's infrastructure and stimulate economic growth in a time of budget constraints are both needed and appreciated.

Our Nation's growing dependence on others for energy, and the need to protect and improve our environment, make your efforts especially important. Greater use and development of one of our Nation's most important transportation modes—our navigable inland waterways—will help remedy these problems. At the same time, these fuel-efficient and cost-effective waterways keep us competitive in international markets. In this regard, we must maintain our inland waterway transportation system. We ask that the Congress restore adequate funding to the Corps of Engineers budget—$6.7 billion in fiscal year 2007—to keep the Nation's navigation system from further deterioration. If this catastrophic problem is not addressed immediately, we are in real danger of losing the use of this most important transportation mode.

As Chairman of the Interstate Committee, I present this summary testimony as a compilation of the most important projects from each of the member States. Each of the States unanimously supports these projects without reservation. I request that the copies of each State's individual statement be made a part of the record, along with this testimony.

Equus Beds Aquifer—Kansas

Equus Beds Aquifer Storage and Recovery Project.—Continuation of a City of Wichita, Groundwater Management District No. 2 and State of Kansas project to construct storage and recovery facilities for a major groundwater resource supplying water to more than 20 percent of Kansas municipal, industrial and irrigation users. The project will capture and recharge in excess of 100 million gallons per day and will also reduce on-going degradation of the existing groundwater by minimizing migration of saline water. Federal authorization of the project through House Bill 1327 introduce last year or through similar legislation this year. Construction Phase One is scheduled for completion in 2007. Continued Federal funding is requested for fiscal year 2007 consistent with this legislation which will authorize funding for 25 percent of the project cost up to a maximum of $30 million during the construction phases.

Arkansas River Navigation Improvements

Mr. Chairman, Public Law 108–137 authorized a 12-foot channel on the McClellan-Kerr Arkansas River Navigation System. The Corps is now obligated to operate and maintain the system as a 12-foot channel. Over 90 percent of the system currently is adequate for a 12-foot channel. Deepening the remainder of the channel to 12 feet will allow carriers to place 43 percent more cargo on each barge, which will reduce the amount of fuel consumed and emissions released. Other environmental benefits include the creation of new aquatic habitat through new dike construction and the construction of least tern islands through beneficial use of dredged material.

Therefore, we request $40 million to construct dike structures to scour out the channel, and dredge necessary areas for improving the depth of the channel. This investment will increase the cost competitiveness of this low-cost, environment-friendly transportation mode and help us combat the loss of industry and jobs to overseas.

Tow Haulage Equipment—Oklahoma

We request funding of $5.0 million to initiate the installation of tow haulage equipment on the locks located along the Arkansas River portion of the McClellan-Kerr Arkansas River Navigation System. Total cost for these three locks is $5 million. This project will involve installation of tow haulage equipment on W.D. Mayo Lock and Dam No. 14, Robert S. Kerr Lock and Dam No. 15, and Webbers Falls Lock and Dam No. 16, on the Oklahoma portion of the waterway. The tow haulage equipment is needed to make transportation of barges more efficient and economical by allowing less time for tows to pass through the various locks.

The testimony we present reveals our firm belief that our inland waterways and the Corps of Engineers' efforts are especially important to our Nation in this time

of trial. Transportation infrastructure like the inland waterways need to be operated and maintained for the benefit of the populace. Without adequate annual budgets, this is impossible.

Mr. Chairman, members of this committee, we respectfully request that you and members of your staff review and respond in a positive way to the attached individual statements from each of our States which set forth specific requests pertaining to those States.

We sincerely appreciate your consideration and assistance.

ARKANSAS

PREPARED STATEMENT OF PAUL LATTURE II, CHAIRMAN FOR ARKANSAS

Mr. Chairman and members of the committee, thank you for the opportunity to present testimony to this most important committee. I serve as Executive Director for the Little Rock Port Authority and as Arkansas Chairman for the Interstate Committee. Other committee members representing Arkansas, in whose behalf this statement is made, are: Mr. Scott McGeorge, President, Pine Bluff Sand and Gravel Company, Pine Bluff; Mr. N.M. "Buck" Shell, CEO, Five Rivers Distribution in Van Buren and Fort Smith; Mr. Jack Long, General Manager, Logistic Services, Inc., Port of Little Rock; and Mr. Jeff Pipkin, President & CEO of the Russellville Area Chamber of Commerce and Director of the Arkansas Valley Alliance for Economic Development.

We call to your attention four projects on the McClellan-Kerr Arkansas River Navigation System (the "System") that are especially important to navigation and the economy of this multi-State area: Arkansas River 12-Foot Channel, Little Rock Port, Backlog of Channel and Structure Maintenance, and the Arkansas-White Rivers Cut-Off Study.

Arkansas River's 12-Foot Channel

Mr. Chairman, Public Law 108–137 authorized a 12-foot channel on the McClellan-Kerr Arkansas River Navigation System. The Corps is now obligated to operate and maintain the system as a 12-foot channel. Over 90 percent of the system currently is adequate for a 12-foot channel. Deepening the remainder of the channel to 12 feet will allow carriers to place 43 percent more cargo on each barge which will reduce the amount of fuel consumed and emissions released. Other environmental benefits include the creation of new aquatic habitat through new dike construction and the construction of least tern islands through beneficial use of dredged material.

Therefore, we request $40,000,000 to continue the work towards achieving the 12-foot navigation channel as noted in Public Law 108–137. Corps of Engineers capability levels on this project are currently $20,000,000 in both the Tulsa and Little Rock Districts. The goal of completing this project in 4 years at the capability levels of the Corps will increase the cost competitiveness of this low cost-environment friendly transportation method and help us combat the loss of industry and jobs to overseas.

Little Rock Port

We recognize the significant reduction in new work and understand the need to combat the Global War on Terrorism. We also recognize the need to look for economic advantages where the needs of the government cross with the good of public entities to serve both needs. We believe a prime example of this effort would be to utilize Section 107 of the River and Harbors Act of 1960 (Public Law 86–645) in the Continuing Authorities Program which would allow the disposal of dredge disposal material to be utilized by the Little Rock Port for beneficial fill material.

Therefore, $7.6 million is requested for this project. This project will compliment the goal of Homeland Security by providing a safe, mid-America environment for shipping while complimenting other Federal investments, including the 12-foot channel project by providing completion of a major economic development engine.

Backlog of Channel Structure Maintenance

We request $10 million Operation and Maintenance Budget which is urgently needed for critical repairs to damaged and deteriorated dikes and revetments to maintain channel alignment and provide original channel configuration while reducing the need for dredging.

More than a decade of neglect to our navigation structures while funding the construction of Montgomery Point Lock & Dam has created a critical backlog of channel structure work that threatens the viability of the McClellan-Kerr Arkansas River Navigation System.

Arkansas-White Rivers Cutoff Study

A cutoff is developing between the Arkansas and White Rivers which, if not corrected, could have dramatic adverse effects on the navigation system as well as significant bottomland hardwoods and pristine environment that provides unique wildlife habitat in southeast Arkansas.

Unless corrected, it is inevitable that a major cutoff will occur negatively impacting navigation on the river, significantly increasing siltation and dredging requirements and, at worst, cutting off the lower end of the Navigation System from the Mississippi River.

We request, for the benefit of the entire system, $300,000 to protect the Navigation System from incurring significant increases in dredging, hazardous navigation conditions, and to preclude a devastating loss of habitat in bottom land hardwoods in the Big Island region between the Arkansas River, the White River and the Mississippi River. This pristine habitat is being threatened from the meandering of these rivers while also adversely impacting the Navigation System. The funds are greatly needed to complete the study and do the required environmental documentation.

In addition to these three vital requests, we urge you to continue to support funding for the construction, and operation and maintenance of the McClellan-Kerr Arkansas River Navigation System which provides low-cost and dependable transportation for farm products, construction aggregates, raw materials and finished products important to our Nation's economic recovery.

It is also most important that you continue construction authority of the McClellan-Kerr Project until remaining channel stabilization problems identified by the Little Rock District Corps of Engineers have been resolved. The Corps needs to develop a permanent solution to the threat of cutoffs developing in the lower reaches of the navigation system and to use environmentally sustainable methods under the existing construction authority.

Mr. Chairman, we appreciate the work of this essential committee and thank you for your efforts that contribute so much to the social and economic well-being of the United States of America.

We fully endorse the statement presented to you today by the Chairman of the Arkansas River Basin Interstate Committee and urge you to favorably consider these requests that are so important to the economic recovery of our region and Nation.

KANSAS

PREPARED STATEMENT OF GERALD H. HOLMAN, CHAIRMAN FOR KANSAS

Mr. Chairman and members of the committee, I am Gerald H. Holman, Senior Vice President of the Wichita Area Chamber of Commerce, Wichita, Kansas and Chairman of the Kansas Interstate Committee for the Arkansas Basin Development Association (ABDA).

The Kansas ABDA representatives join with our colleagues from the other Arkansas River Basin States to form the multi-State Arkansas Basin Development Association. We fully endorse the summary statement presented to you by the Chairman of the Arkansas River Basin Interstate Committee.

Public Law 108–137 authorized a 12-foot channel on the McClellan-Kerr Arkansas River Navigation System. The Corps is now obligated to operate and maintain the system as a 12-foot channel. Over 90 percent of the system currently is adequate for a 12-foot channel. Deepening the remainder of the channel to 12 feet will allow carriers to place 43 percent more cargo on barges, which will reduce the amount of fuel consumed and emissions released. Funds in the amount of $7.0 million were allocated in fiscal year 2005 with $1.5 million used to complete the Feasibility Study and Environmental Impact Statement with the other $5.5 million used on engineering, design, and construction activities. In conjunction with the deepening project the Corps is preparing a Basin Wide Master Plan that will include an integrated major maintenance construction and operational maintenance prioritized list for investment opportunities. Other environmental benefits include the creation of new aquatic habitat through new dike construction and the construction of Least Tern islands through beneficial use of dredged material.

Therefore, we request $40 million to maintain the authorized depth by constructing dike structures to minimize dredging and dredging only necessary areas. This investment will increase the cost competitiveness of this low cost, environment-friendly transportation method and help us combat the loss of industry and jobs to overseas.

The critical water resources projects in the Kansas portion of the Arkansas River Basin are identified below. The projects are environmental and conservation in nature and all have regional and/or multi-State impact. We are grateful for your past commitment to these projects.

We ask for your continued support for this important Bureau of Reclamation project on behalf of the Wichita/South Central Kansas area:

Equus Beds Aquifer Storage and Recovery Project.—This is the continuation of a Bureau of Reclamation project jointly endorsed by the City of Wichita, Groundwater Management District No. 2 and the State of Kansas. This model technology has proven the feasibility of recharging a major groundwater aquifer supplying water to nearly 600,000 irrigation, municipal and industrial users. The demonstration project has successfully recharged more than 1 billion gallons of water from the Little Arkansas River. The project is essential to help protect the aquifer from on-going degradation caused by the migration of saline water.

The Equus Beds are vital to the surrounding agricultural economy. Also, environmental protection of the aquifer, which this strategic project provides, has increasing importance to ensure quality water for the future since south central Kansas will rely to an even greater extent on the Equus Beds aquifer for water resources.

The south-central Kansas economy including the Wichita MSA represents:

—More than 20 percent of the State's employment.

—More than one-third of the State's manufacturing employment and payroll.

—At least 20 percent of the State personal income.

The quality of life and economic future for more than 20 percent of the State's population and economy is dependent upon the availability of reliable, high quality water resources from the Equus Beds.

The State of Kansas supports the project as the needed cornerstone for the area agricultural economy and for the economy of the Wichita metropolitan area. The Chief Engineer of Kansas has authorized full-scale construction.

The aquifer storage and recovery project is a vital component of Wichita's comprehensive and integrated water supply strategy. The full scale design concept for the aquifer storage and recovery project calls for a multi-year construction program. Phase One is estimated to cost approximately $25 million and is scheduled for completion in 2007. The total project involving the capture and recharge of more than 100 million gallons of water per day is estimated to cost $130 million over 10 years. This is substantially less costly, both environmentally and economically, when compared with reservoir construction or other alternatives.

We are grateful for your previous cost share funding during the demonstration phase, as a compliment to funds provided by the City of Wichita. As we enter the construction phase, we request continued Congressional support in two ways:

—House Bill 1327 was passed by the House of Representatives last year. The Senate passed a very similar bill, Senate Bill 1025. This legislation, or similar legislation, would authorize the project and also provide cost share funding up to 25 percent of the project cost to a maximum of $30 million. We request your support of this legislation authorizing the Aquifer Storage and Recovery Project as a Federal project and directing the Bureau of Reclamation to participate in its final design and construction to completion.

—Through continued cost share funding of the full-scale Aquifer Storage and Recovery Project within the limits of House Bill 1327 or similar legislation for fiscal year 2007.

The Arkansas River Basin is a treasure that must be protected for future generations. However, we are experiencing decline in water quality due to sediment and nutrient loading. The quality of the water in the Arkansas River and its tributaries, including the numerous reservoirs in the system, is a reflection of its watershed and land use practices. It is imperative that the subbasins within the system are studied using the watershed approach and that protective remedies are identified and implemented to reverse the continuing decline in water quality. We recommend adding the following high priority watershed studies to the fiscal year 2007 budget:

—*Walnut River (El Dorado Lake) Watershed Feasibility Study*.—A reconnaissance study was conducted in July 2000 by the USACE, Tulsa District, which identified ecosystem restoration as a primary concern in the Walnut Basin. The Kansas Water Office entered into an agreement with the USACE to begin a Walnut River Basin Ecosystem Restoration Feasibility Study for the entire basin.

Following the initial phase of the feasibility study, it was decided that focusing the study to a smaller geographic area would make more efficient use of existing local, State, and Federal resources. The project was re-scoped to focus study efforts on protection and restoration of El Dorado Lake and its contributing watershed.

Public water supply storage in El Dorado Lake is owned by the City of El Dorado and represents an important future regional water supply source for the Walnut Basin. The reservoir and its watershed have been designated by the Kansas Department of Health and Environment as high priority for Total Maximum Daily Load (TMDL) implementation for eutrophication (nutrients) and siltation. Fecal coliform bacteria is another high priority TMDL pollutant. Because of the importance of protecting both water quality and quantity in El Dorado Lake, and to more effectively target limited resources, KWO has partnered with the City of El Dorado to address long-term protection and restoration needs for the reservoir and its watershed, in cooperation with other local, State and Federal agencies.

Study efforts include addressing identified opportunities to reduce sedimentation in El Dorado Lake and meet the watershed total daily maximum load (TMDL) issues of sediment and eutrophication for the purpose of preserving existing water supply storage, restoring riparian and aquatic habitat in the lake and watershed.

The fiscal year 2006 budget for this project in the amount of $200,000 is for continuation of the feasibility study. We support the President's proposed fiscal year 2007 budget which includes $80,000 for completion of the feasibility study in September 2007.

—*Grand (Neosho) Basin Reconnaissance Study*.—A need exists for a basin-wide water resource planning effort in the Grand-Neosho River basin, apart from the issues associated with Grand Lake, Oklahoma. A Federal interest has been determined from the reconnaissance study as a result from a Congressional add in fiscal year 2003 and another add was appropriated in fiscal year 2004. The Reconnaissance Report has been approved. Feasibility Cost Share Agreements will be executed in 2006. The study would support management efforts by Kansas and Oklahoma agencies to address watershed and reservoir restoration issues in the Grand Lake Watershed. Local interest exists for ecosystem restoration projects and flood damage reduction projects. We request funding in the amount of $450,000 in fiscal year 2007.

Grand Lake Feasibility Study.—A need exists to evaluate solutions to upstream flooding problems associated with the adequacy of existing real estate easements necessary for flood control operations of Grand Lake, Oklahoma. A study authorized by the Water Resources Development Act of 1996 was completed in September of 1998 and determined that if the project were constructed based on current criteria, additional easements would be required. Section 449 of the WRDA of 2000 directed the Secretary to evaluate backwater effects specifically due to flood control operations on land around Grand Lake and authorizes a feasibility study at full Federal cost if the Secretary determines that Federal actions have been a significant cause of the backwater effects. The Tulsa District is preparing a letter report which will be submitted to the ASA(CW) for a determination on proceeding with a full federally financed feasibility study. If the ASA(CW) determines that Federal actions have been a significant cause of the flooding, feasibility study activities would be initiated at full Federal expense. Since Grand Lake is an integral component of a system flood control operation consisting of 11 principal reservoir projects in the Arkansas River basin, changes in the operations of the project or other upstream changes could have a significant impact on flood control, hydropower and navigation operations in the Grand (Neosho) River system and on the Arkansas River Basin system, as well. A feasibility study is necessary to determine the most cost-effective comprehensive solution to the real estate inadequacies. We urge you to provide $500,000 to fund feasibility studies for this important project in fiscal year 2007 and to direct the Corps of Engineers to execute the study at full Federal expense. This project has been a Congressional add for the past 4 years, but there are no funds in the fiscal year 2007 President's budget request to continue this project.

Continuing Authorities Programs.—We support funding of needed programs including the Small Flood Control Projects Program (Section 205 of the 1948 Flood Control Act, as amended), Aquatic Ecosystem Restoration (Section 206 of the 1996 Water Resources Development Act, as amended), Ecosystem Restoration (Section 1135 of the 1986 Water Resources Development Act, as amended) as well as the Emergency Streambank Stabilization Program (Section 14 of the 1946 Flood Control Act, as amended). Smaller communities in Kansas (Iola, Liberal, McPherson, Augusta, Parsons, Altoona, Kinsley, Newton, Arkansas City, Coffeyville and Medicine Lodge) have previously requested assistance from the Corps of Engineers under the Section 205 and Section 14 programs. The City of Wichita also requests funding through these programs to address flooding problems. We urge you to support an increase of these programs to the $65 million programmatic limit for the Small Flood Control Projects Program, $35 million for Aquatic Ecosystem Restoration, $35

million for the Ecosystem Restoration Program and $25 million for the Emergency Streambank Stabilization Program.

The Planning Assistance to States Program under section 22 of the Water Resources Development Act of 1974, as amended, provides Federal funding to assist the States in water resource planning. The State of Kansas is grateful for previous funding under this program which has assisted small Kansas communities in cost sharing needed resource planning as called for in the Kansas State Water Plan. We request continued funding of this program at the $10 million programmatic limit which will allow the State of Kansas to receive the $500,000 limit.

Finally, we are very grateful that both the Corps of Engineers and Bureau of Reclamation have the expertise needed for the development and protection of water resources infrastructure. It is essential to have the integrity and continuity these agencies provide on major public projects. Your continued support of these vital agencies, including funding, will be appreciated. Our infrastructure must be maintained and where needed, enhanced for the future.

Mr. Chairman and members of these committees, thank you very much for the dedicated manner in which you have dealt with the Water Resources Programs and for allowing us to present our funding requests.

OKLAHOMA

PREPARED STATEMENT OF JAMES M. HEWGLEY, JR., CHAIRMAN FOR OKLAHOMA

Mr. Chairman and members of the committee, I am James M. Hewgley, Jr., Oklahoma Chairman of the Arkansas River Basin Interstate Committee, from Tulsa, Oklahoma.

It is my privilege to present this statement on behalf of the Oklahoma members of our committee in support of adequate funding for water resource development projects in our area of the Arkansas River Basin. Other members of the committee are: Mr. Ted Coombes, Tulsa; Mr. A. Earnest Gilder, Muskogee; Mr. Terry McDonald, Tulsa; and Mr. Lew Meibergen, Enid, who also serves as Chairman of the combined Arkansas River Basin Interstate Committee.

The committee is encouraged about water resource developmental opportunities in the Arkansas River Basin for not only navigation, but also hydropower, flood control, recreation, water supply, and environmental stewardship. However, we are concerned that existing and proposed funding levels will not support the needs.

Mr. Chairman, Public Law 108–137 authorized a 12-foot channel on the McClellan-Kerr Arkansas River Navigation System. The Corps is now obligated to operate and maintain the system as a 12-foot channel. Over 90 percent of the system currently is adequate for a 12-foot channel. Deepening the remainder of the channel to 12 feet will allow carriers to place 43 percent more cargo on barges, which will reduce the amount of fuel consumed and emissions released. Funds in the amount of $7.0 million were allocated in fiscal year 2005 with $1.5 million used to complete the Feasibility Study and Environmental Impact Statement with the other $5.5 million used on engineering, design, and construction activities. In conjunction with the deepening project the Corps is preparing a Basin Wide Master Plan that will include an integrated major maintenance construction and operational maintenance prioritized list for investment opportunities. Other environmental benefits include the creation of new aquatic habitat through new dike construction and the construction of Least Tern islands through beneficial use of dredged material.

Therefore, we request $40 million to maintain the authorized depth by constructing dike structures to minimize dredging and dredging only necessary areas. This investment will increase the cost competitiveness of this low-cost, environment-friendly transportation method and help us combat the loss of industry and jobs to overseas.

Tow Haulage Equipment—Oklahoma.—We request funding of $5.0 million to initiate the installation of tow haulage equipment on the locks located along the Arkansas River portion of the McClellan-Kerr Arkansas River Navigation System.

The Power Plant at Webbers Falls Lock and Dam on the Arkansas River has suffered from greatly reduced reliability due to turbine design problems. One of the three turbines at the project has suffered major damage and will remain unavailable for generation until it can be rebuilt. Because this is a run-of-the-river facility with no storage, energy spilled due to off-line units is energy that is lost forever. A feasibility study recommending major rehabilitation of this unit has been approved by the office of the Chief of Engineers.

Similar problems have been experienced at Ozark-Jeta Taylor Lock and Dam on the Arkansas River in Arkansas. Congress approved a new start and funding to begin the major rehabilitation of the Ozark powerhouse in fiscal year 2003. Congress approved the administration's fiscal year 2005 budget request of $5 million in

Construction General funding to continue this major rehabilitation. By combining the turbine replacements into a single contract, the Little Rock District awarded a contract in May 2005 to replace the turbines with a more reliable design. This contract also includes three options to provide newly designed turbines for the Webbers Falls project as well, if additional funding is forthcoming as recommended by the Corps' Hydropower Design Center. The Corps has saved $5 million over the life of the project. Unfortunately, no funding for these projects was included in the administration's fiscal year 2006 and 2007 budget requests, and the conference report on the fiscal year 2006 Energy and Water Development Appropriations bill also excluded funding for them.

The wholesale power customers are providing essential funding for the turbine replacement contract in fiscal year 2006 under terms of a Memorandum of Agreement (MOA) between the Corps, the customers and Southwestern Power Administration. However, the MOA is not a viable vehicle for long-term funding of the contract.

The committee recommends that Congress appropriate $19.5 million to start the Webbers Falls major rehab in early in fiscal year 2007.

Arkansas-White Rivers Cutoff Study is to determine a solution to prevent the developing cutoff from joining the Arkansas and White Rivers near the confluence of the McClellan-Kerr Arkansas River Navigation System and the Mississippi Rivers. If not corrected, this occurrence could have a dramatic adverse effect on the navigation system. Unless corrected, this will effectively drain the water from the navigation system and halt the movement of commerce on the system.

Therefore we request an appropriation of $300,000 to protect the navigation system from closure.

There has been over $5.5 billion invested in the construction and development of the McClellan-Kerr Arkansas River Navigation System by the Federal Government ($1.3 billion) and the public and private sector ($4.2 billion+), resulting in the creation of over 50,000 jobs in this partnered project.

Maintenance of the Navigation System.—In preparation for the deepening of the navigation system from 9 feet to 12 feet, there is a backlog of maintenance items that has been deferred due to insufficient budgets to allow proper maintenance. These maintenance items are required even to support navigation at the 9 foot depth in order to not jeopardize the reliability of the system. Therefore, we request additional funding in the amount of $1,549,000—plus the amount from Little Rock, over and above normal funding, for deferred channel maintenance. These funds would be used for such things as repair of bank stabilization work, needed advance maintenance dredging, and other repairs needed on the system's components that have deteriorated over the past 3 decades.

In addition to the system-wide needed maintenance items mentioned above, the budget for the Corps of Engineers for the past several years has been insufficient to allow proper maintenance of the McClellan-Kerr Arkansas River Navigation System-Oklahoma portion. As a result, the backlog of maintenance items has continued to increase. If these important maintenance issues are not addressed soon, the reliability of the system will be jeopardized. The portion of the system in Oklahoma alone is responsible for returning $2.6 billion in annual benefits to the regional economy. The fiscal year 2006 O&M President's budget for Tulsa District was $8.2 million less (over 11 percent) than the fiscal year 2005 appropriation, which will result in no funding being available for critical infrastructure maintenance in fiscal year 2006. The fiscal year 2007 O&M President's budget is currently proposed at $72.4 million which is presently $10 million more than the fiscal year 2006 budget. This $10 million increase is offset by higher energy, labor, and construction costs. We therefore request that $2.1 million be added to the budget to accomplish critical infrastructure maintenance items on the Oklahoma portion of the system as follows:

—*McClellan-Kerr*.—$600,000 to repair plate seals for the weirs;

—*Robert S. Kerr*.—$1,500,000 to repair erosion and construct emergency mooring wood dolphins.

Additional O&M funds are also requested for other high priority, non-navigation, water resource needs including $600,000 for tainter gate repair at Kaw Lake; $1,200,000 to repair sluice gates and liners at Keystone Lake; $1,500,000 for tainter gate repair at Fort Gibson Lake; and $400,000 for tainter gate hoist equipment replacement at Tenkiller Ferry Lake.

Miami, Oklahoma and Vicinity Feasibility Study.—We request funding of $350,000 to move into the feasibility stage for the vicinity in Ottawa County including and surrounding Miami, Oklahoma in the Grand (Neosho) Basin. Water resource planning-related concerns include chronic flooding, ecosystem impairment, poor water quality, subsidence, chat piles, mine shafts, health effects, and Native American issues. The State of Oklahoma's desire is to address the watershed issues in a holistic fashion and restore the watershed to acceptable levels. Study alter-

natives could include structural and non-structural flood damage measures, creation of riverine corridors for habitat and flood storage, development of wetlands to improve aquatic habitat and other measures to enhance the quality and availability of habitat and reduce flood damages.

Oologah Lake Watershed Feasibility Study.—We request funding of $500,000, which is $500,000 more than the President's budget request, for ongoing feasibility studies at Oologah Lake and in the upstream watershed. The lake is an important water supply source for the city of Tulsa and protection of the lake and maintaining and enhancing the quality of the water is important for the economic development of the city. Recent concerns have been expressed by the City of Tulsa and others regarding potential water quality issues that impact water users, as well as important aquatic and terrestrial habitat. Concerns are related to sediment loading and turbidity, oilfield-related contaminants and nutrient loading.

Grand (Neosho) Basin Reconnaissance Study.—We request funding in the amount of $450,000 to conduct a feasibility study of the water resource problems in the Grand (Neosho) Basin in Oklahoma and Kansas. There is a need for a basin-wide water resource planning effort in the Grand-Neosho River basin, apart from the issues associated with Grand Lake, Oklahoma. The reconnaissance report has been approved and indicated that there is a Federal interest in this project and the feasibility will focus on the evaluation of institutional measures which could assist communities, landowners, and other interests in northeastern Oklahoma and southeastern Kansas in the development of non-structural measures to reduce flood damages in the basin. Feasibility Cost Share Agreements will be executed in 2006 but the fiscal year 2007 President's budget did not provide funding to continue into the feasibility stage.

Spavinaw Creek Watershed Study.—Spavinaw Creek and its downstream impoundments, Eucha and Spavinaw Lakes, are severely impacted by nutrient loading and excessive algae growth as a result of agricultural practices located in Arkansas and Oklahoma. Degradation of water quality has led to taste and odor problems, increased treatment costs, and a decreased recreational and aesthetic value of the lakes. Together, Spavinaw and Eucha Lakes provide 47 percent of the water supply for the Tulsa metropolitan area. The Metropolitan Utility Authority entered into the feasibility cost-share agreement in June 2004. We request funds in the amount of $210,000 to continue this study.

Grand Lake Feasibility Study.—A need exists to evaluate solutions to upstream flooding problems associated with the adequacy of existing real estate easements necessary for flood control operations of Grand Lake, Oklahoma. A feasibility study is necessary to determine the most cost-effective comprehensive solution to the real estate inadequacies. We urge you to provide $500,000 to fund feasibility studies for this important project in fiscal year 2007 and to direct the Corps of Engineers to execute the study at full Federal expense. This project has been a Congressional add for the past 4 years, but there are no funds in the fiscal year 2007 President's budget request to continue this project.

Section 205.—Although the Small Flood Control Projects Program addresses flood problems which generally impact smaller communities and rural areas and would appear to benefit only those communities, the impact of those projects on economic development crosses county, regional and sometimes State boundaries. There is limited funding available for these projects and we urge this program be increased to an annual limit of $65 million.

We also request your support of the Planning Assistance to States Program (Section 22 of the 1974 Water Resources Development Act) which authorizes the Corps of Engineers to use its technical expertise in water and related land resource management to help States and Indian tribes solve their water resource problems. The Water Resources Development Act of 1996 increased the annual program limit from $6 million to $10 million and we urge this program be fully funded to the programmatic limit of $10 million. We urge that you support the State of Oklahoma in requesting their full allocation of $500,000 for the Planning Assistance to States program for several important projects awaiting execution including the cities of Tulsa, Bristow, and Bartlesville and for State Water Planning efforts.

In addition, we request your support of the Section 107 Navigation Program and ask that you provide $100,000 for the initiation of studies for a port in Wagoner County, Oklahoma. A Wagoner County Port could greatly benefit the region and utilize the authorized deepening of the McClellan-Kerr Arkansas River Navigation system to benefit the Nation.

We strongly urge the Appropriations Committee to raise the Corps of Engineers' budget to $6.7 billion to help get delayed construction projects back on schedule and to reduce the deferred maintenance backlog which is out of control. This will help

the Corps of Engineers meet the obligations of the Federal Government to people of this great country.

Mr. Chairman, we appreciate this opportunity to present our view on these subjects.

PREPARED STATEMENT OF THE CITY OF FLAGSTAFF, ARIZONA

Chairman Domenici, Ranking Member Reid, and distinguished members of the subcommittee, thank you for allowing me to testify on behalf of the City of Flagstaff, Arizona in support of $22.6 million in the Army Corps of Engineers budget for the Rio de Flag flood control project in fiscal year 2007. I believe this project is critically important to the city, to northern Arizona, and, ultimately, to the Nation.

As you may know, Mr. Chairman, with this subcommittee's help over the last 2 fiscal years, Rio de Flag received nearly $10 million to continue construction on this important project. We are extremely grateful that the subcommittee boosted this project well above the president's request both years, and we would appreciate your continued support for this project in fiscal year 2007.

Like many other projects under the Army Corps' jurisdiction, Rio de Flag received no funding in the president's fiscal year 2007 budget, although the Corps has expressed $22.6 million as optimal funding to continue construction on the project. We are hopeful that the subcommittee will fund the Rio de Flag project at $22.6 million when drafting its bill in order to keep the project on an optimal schedule.

Flooding along the Rio de Flag dates back as far as 1888. The Army Corps has identified a Federal interest in solving this long-standing flooding problem through the Rio de Flag, Flagstaff, Arizona Feasibility Report and Environmental Impact Study (EIS). The recommended plan contained in this feasibility report was developed based on the following opportunities: (1) flood control and flood damage reduction; (2) environmental mitigation and enhancement; (3) water resource management; (4) public recreation; and (5) redevelopment opportunities. This plan will result in benefits to not only the local community, but to the region and the Nation.

The feasibility study by the Corps of Engineers has revealed that a 500-year flood could cause serious economic hardship to the city. In fact, a devastating 500-year flood could damage or destroy approximately 1,500 structures valued at more than $400 million. Similarly, a 100-year flood would cause an estimated $100 million in damages. In the event of a catastrophic flood, over half of Flagstaff's population of more than 60,000 would be directly impacted or affected.

In addition, a wide range of residential, commercial, downtown business and tourism, and industrial properties are at risk. Damages could also occur to numerous historic structures and historic Route 66. The Burlington Northern & Santa Fe Railway (BNSF), one of the primary east-west corridors for rail freight, could be destroyed, as well as U.S. Interstate 40, one of the country's most important east-west interstate links. Additionally, a significant portion of Northern Arizona University (NAU) could incur catastrophic physical damages, disruptions, and closings. Public infrastructure (e.g., streets, bridges, water, and sewer facilities), and franchised utilities (e.g., power and telecommunications) could be affected or destroyed. Transportation disruptions could make large areas of the city inaccessible for days.

Mr. Chairman, the intense wildfires that have devastated the West during the last several years have only exacerbated the flood potential and hazard in Flagstaff. An intense wildfire near Flagstaff could strip the soil of ground cover and vegetation, which could, in turn, increase runoff and pose an even greater threat of a catastrophic flood.

In short, a large flood could cripple Flagstaff for years. This is why the city believes it is so important to ensure that this project remains on schedule and that the Corps is able to maximize its optimal funding of $22.6 million in fiscal year 2007 for construction of this flood control project.

In the city's discussions with the Corps, both the central office in Washington and its Los Angeles District Office also believe that the Rio de Flag project is of the utmost importance and both offices believe the project should be placed high on the subcommittee's priority list. We are hopeful that the subcommittee will consider this advice and also place the project high on its priority list and fully fund the project at $22.6 million for fiscal year 2007.

As you may know, project construction and implementation of Rio de Flag was authorized in the Water Resources Development Act (WRDA) of 2000. The total project cost is estimated to be $54,100,000 in and above the reconnaissance study or the feasibility study. The Non-Federal share is currently $24,000,000 and the Federal share is currently $30,000,000. Final project costs must be adjusted based on Value Engineering and final design features. It is important to note the City of

Flagstaff has already committed more than $10,500,000 to this project, and an additional $2,000,000 in excess of its cost share agreement. This clearly demonstrates the city's commitment to completing this important project. Through this investment in the project, the city has entered into the Project Cooperation Agreement (PCA) with the Department of the Army.

The City of Flagstaff, as the non-Federal sponsor, is responsible for all costs related to required Lands, Easements, Rights-of-Way, Relocations, and Disposals (LERRD's). The city has already secured the necessary property rights to begin construction in 2004. Implementation of the city's Downtown and Southside Redevelopment Initiatives ($100,000,000 in private funds) are entirely dependent on the success of the Rio de Flag project. The Rio de Flag project will also provide a critical missing bike/pedestrian connection under Route 66 and the BNSF Railroad to replace the existing hazardous at grade crossings.

Both design and construction are divided into two phases. Phase I construction commenced in 2004. Phase II of the project commenced last year.

Mr. Chairman, the Rio de Flag project is exactly the kind of project that was envisioned when the Corps was created because it will avert catastrophic floods, it will save lives and property, and it will promote economic growth. In short, this project is a win-win for the Federal Government, the city, and the surrounding communities.

Furthermore, the amount of money invested in this project by the Federal Government—approximately $30 million—will be saved exponentially in costs to the Federal Government in the case of a large and catastrophic flood, which could be more than $395 million. It will also promote economic growth and redevelopment along areas that are currently underserved because of the flood potential.

In conclusion, the Rio de Flag project should be considered a high priority for this subcommittee, and I encourage you to support full funding of $22.6 million for this project in the fiscal year 2007 Energy and Water Development Appropriations bill. Thank you in advance for your consideration.

PREPARED STATEMENT OF THE TENNESSEE-TOMBIGBEE WATERWAY DEVELOPMENT AUTHORITY

Mr. Chairman, we are pleased to once again submit to you for your consideration the Authority's requests for fiscal year 2007 appropriations for waterway projects of importance to our region, including the Tennessee-Tombigbee Waterway. This is the 47th consecutive year that the waterway compact has presented its funding requests to the Congress.

The Tennessee-Tombigbee Waterway Development Authority is a federally authorized interstate compact. Its member States are Alabama, Kentucky, Mississippi, and Tennessee. Governor Haley Barbour of Mississippi is chairman of the development authority.

As we have reported to you in the past, the Authority is most concerned that ports and waterways as well as the rest of the Nation's aging infrastructure are woefully under-funded commensurate with needs. While this Nation continues to underinvest in its infrastructure, China will spend $242 billion on rail service and intermodal connections with its seaports, alone, by 2020. China is projected to surpass the United States as the world's dominant economic power by 2050, largely supported by these kinds of improvements.

While it is encouraging that the proposed 2007 budget request for the Corps of Engineers is the largest in memory by an administration, it is still nearly $600 million less than that approved by the Congress for this year. We are especially concerned that enough funds are not being provided to adequately operate and maintain our ports and waterways. Although the Tennessee-Tombigbee is a relatively new waterway compared to other systems, it has already accumulated a $12 million backlog of indefinitely deferred maintenance and repairs due to under funding in prior years assuming the proposed budget is approved. The President's budget is nearly $4 million less than that needed to adequately fund the Tenn-Tom as described below.

TENNESSEE-TOMBIGBEE WATERWAY

[In millions of dollars]

	Fiscal Year 2006 Level	Proposed 2007 Budget	Authority's 2007 Recommendation
O&M	24.0	20.6	24.5
Wildlife Mitigation	2.0	1.5	2.0

Recognizing the budgetary constraints the Congress faces, we are recommending only level funding for the Tenn-Tom in 2007. If approved, the requested $24.5 million will adequately maintain the waterway and allow it to generate its expected benefits. This level of funding will also decrease the O&M backlog by nearly $4 million.

The $3.9 million recommended increase above the President's budget would be used for dredging and to provide more upland disposal capacity to accommodate the increased dredging needs. Also, additional funds will help eradicate a growing problem with aquatic weeds that have in the past been so prevalent to stop the operation of one of the waterway's locks. This is the No. 1 complaint from the public concerning the waterway.

The recommended $2 million for the Wildlife Mitigation Project will also provide level funding for the reimbursement of expenses incurred by the States of Alabama and Mississippi to manage some 126,000 acres of Federal wildlife habitat that is part of the project.

The Tenn-Tom has now been in operation 21 years. There have not been any improvements made since its completion. The waterway has helped attract over $6 billion of new and expanded industrial development to the waterway corridor. Nearly $1 billion of new investments were announced in 2005, alone, that will generate about 1 million tons of additional commerce for the project. The Authority is requesting that $5 million be appropriated to enable the Corps of Engineers to install cells near Columbus, MS, for mooring and fleeting of the growing number of barges operating on the waterway. The cells are also needed for mooring tows during high water when it is not safe to transit the Bevill Lock and Dam located downstream. The Tenn-Tom is the only major waterway where the Corps has not built these kinds of facilities to provide safer and more efficient navigation.

KENTUCKY LOCK

[In millions of dollars]

	Fiscal Year 2006 Level	2007 Proposed Budget	Authority's 2007 Recommendation
Lock Construction	23.0	.....	55.0

Construction of a new lock at Kentucky Dam on the Tennessee River is our highest priority of all the waterway improvements now being undertaken by the Corps. The Tennessee-Cumberland system transports nearly 60 million tons of commerce each year with nearly 40 million tons traversing Kentucky Lock. The nearly 60-year-old existing lock cannot accommodate such a large volume of traffic and is one of the most inefficient bottlenecks on the entire waterway system. Delays to transit the lock extend as long as 7 hours, costing shippers as much as $70 million in unnecessary transportation expense each year.

Although construction has been underway for 6 years and nearly $200 million have been invested so far, the Office of Management and Budget has again instituted a budget policy not to fund any Corps project that has less than a 3-to-1 remaining benefits-to-remaining-cost ratio. The Congress resoundingly rejected that arbitrary standard last year and we strongly recommend it do the same for 2007. The project has a 2.7-to-1 B/C ratio, well above the 1-to-1 ratio the Congress has traditionally adopted to determine a project's eligibility for Federal funding.

Fifty-five million dollars is requested to continue construction of this important project on a reasonable and efficient schedule.

CHICKAMAUGA LOCK

[In millions of dollars]

	Fiscal Year 2006 Level	Proposed 2007 Budget	Authority's 2007 Recommendation
Lock Construction	10.0	27.0	27.0
Lock Repairs	2.4	1.25	1.25

We support the President's budget for this important project and recommend those funds shown above be approved. Twenty-seven million dollars will permit the Corps to make reasonable progress in constructing a new lock to replace the 60-year-old lock that is too small to serve existing commercial traffic. It also has some serious structural problems. These funds are critical to help preclude a potentially serious safety problem with the old lock.

TENNESSEE RIVER

[In millions of dollars]

	Fiscal Year 2006 Level	Proposed 2007 Budget	Authority's 2007 Recommendation
O&M	18.5	19.3	22.5

We recommend that $22.5 million be appropriated for the operation and maintenance of the Tennessee River, one of the busiest waterways in the Nation. Like most of the Nation's waterways, many of the locks and dams on the Tennessee have outlived their 50-year economic life and need extensive repairs to prolong the project's physical life. This aggressive maintenance requires increased funding.

In closing, we are very concerned about a new budget policy adopted by the Corps and the administration to aggregate O&M funds by region instead by individual projects as typically presented in the appropriations bills. As a non-Federal sponsor of one of the Corps' largest projects, it would be difficult, if not impossible, to fulfill our responsibilities for ensuring the waterway is adequately funded each year. Your committee, the project's congressional supporters and the Authority would have no assurance of its level of funding, either being proposed by the administration or what is finally allocated after enactment of the appropriations bill. The current procedure has always worked for the benefit of all parties, so why fix something that is not broken?

Mr. Chairman, we greatly appreciate the leadership and support you have given to developing the Nation's water resources. We especially thank you for your continued support of the Tenn-Tom Waterway and its funding needs. We respectfully ask for your careful consideration and approval of the above requests for the Tenn-Tom Waterway and other projects of such great importance to our region.

PREPARED STATEMENT OF THE UPPER MISSISSIPPI RIVER BASIN ASSOCIATION (UMRBA)

[In millions of dollars]

	President's Request	UMRBA Recommendation
Construction General:		
Upper Miss. River Restoration Program (aka EMP)	26.8	33.52
Lock and Dam 3 (Major Rehabilitation) [1]		4.30
Lock and Dam 11 (Major Rehabilitation) [1]	20.32	27.75
Lock and Dam 19 (Major Rehabilitation) [1]	5.44	5.60
Lock and Dam 24 (Major Rehabilitation) [1]	3.90	3.90
Locks 27 (Major Rehabilitation) [1]	3.40	5.20
Upper Mississippi and Illinois Rivers Navigation and Ecosystem Sustainability Program (if construction is authorized)		16.20
Operation and Maintenance:		
O&M of the Upper Mississippi and Illinois Rivers Navigation System [2]	174.36	263.44

[In millions of dollars]

	President's Request	UMRBA Recommendation
General Investigations:		
Upper Mississippi and Illinois Rivers Navigation and Ecosystem Sustainability Program (PED)	.....	24.00

[1] Funding for major rehabilitation projects would be shifted to the O&M account under the President's budget proposal. Major rehabilitation would still be cost-shared 50 percent from the Inland Waterways Trust Fund.

[2] The administration has modified the structure of the O&M account in its fiscal year 2007 budget. Rather than budgeting for individual projects, the O&M request is organized by region and by business line within region. The UMRBA is addressing its testimony to that portion of the Region 7 navigation business line that is attributable to O&M of the Upper Mississippi and Illinois Rivers navigation system. Thus, we have disaggregated numbers from the President's budget.

The Upper Mississippi River Basin Association (UMRBA) is the organization created in 1981 by the Governors of Illinois, Iowa, Minnesota, Missouri, and Wisconsin to serve as a forum for coordinating river-related State programs and policies and for collaborating with Federal agencies on regional issues. As such, the UMRBA works closely with the Corps of Engineers on a variety of programs. Of particular interest to the basin States are the following:

CORPS CONTRACTING PRACTICES

In its fiscal year 2006 energy and water appropriations measure, Congress included language generally barring the Corps from using continuing contracts. While the States understand Congress' need to retain appropriate control and oversight, this new provision, in combination with restrictions on reprogramming, significantly reduces the Corps' flexibility and efficiency in implementing ongoing programs, such as operation and maintenance, the River Restoration Program, and the proposed Navigation and Ecosystem Sustainability Program. By breaking work into smaller contracts, the Corps' planning and administration costs increase, as do costs associated with repeated mobilization/demobilization, purchasing in smaller quantities, etc. The impacts of these increased costs in this very tight fiscal environment are particularly deleterious. The UMRBA encourages Congress to develop an approach to Corps contracting that ensures appropriate controls and accountability while also permitting the Corps to execute its work efficiently and effectively.

UPPER MISSISSIPPI AND ILLINOIS RIVERS NAVIGATION STUDY

It has been more than a year since the Corps completed its 14-year Upper Mississippi and Illinois Rivers Navigation Study, issuing the final feasibility report in September 2004 and the Chief's Report in December 2004. While Congress has not yet authorized the recommended integrated plan for navigation improvements and ecosystem restoration, it has provided preconstruction engineering and design (PED) funding to ensure that the necessary planning and design work can proceed, in anticipation of construction authorization. Congress appropriated $13.5 million for PED in fiscal year 2005 and $10.0 million in fiscal year 2006. A similar bridging strategy will be necessary in fiscal year 2007 if authorization is still pending.

PED.—The UMRBA supports $24 million for PED in fiscal year 2007, despite the fact that the administration has once again not included PED in its budget request. Many of the large scale projects, such as new locks or fish passage at dams, require 3 years or more of PED before they can move to construction. It is thus critical that PED work continue without pause and be sustained over time. In fiscal year 2005 and 2006, PED funding has been directed to both navigation improvements and ecosystem restoration projects. Continuing this dual purpose approach in fiscal year 2007 would require that $16.1 million be directed to navigation measures (including mooring facilities, economic modeling and evaluations, switchboats, and lock design at 3 sites), $5.9 million to ecosystem restoration plan formulation and evaluation, and $2.0 million for program management.

Construction.—If the integrated navigation and ecosystem restoration program is authorized for construction this year, construction could be initiated on some projects in fiscal year 2007. In that event, UMRBA would recommend construction funding of $16.2 million. This funding would support mooring facilities at 7 sites, switchboats at 2 sites, and 8 ecosystem restoration projects.

UPPER MISSISSIPPI RIVER RESTORATION PROGRAM (AKA EMP)

For the past 19 years, the Upper Mississippi River Restoration Program, commonly known as the Environmental Management Program (EMP), has been the premier program for restoring the river's habitat and monitoring the river's ecological health. As such, the EMP is key to achieving Congress' vision of the Upper Mis-

sissippi as a "nationally significant ecosystem and a nationally significant commercial navigation system." Congress reaffirmed its support for this program in the 1999 Water Resources Development Act by reauthorizing the EMP as a continuing authority and increasing the annual authorized appropriation to $33.5 million. As the EMP embarks upon its 20th anniversary year, the UMRBA is pleased that the administration has identified the EMP as one of "six construction projects considered to be national priorities." Even with this emphasis, however, the administration has requested only $26.8 million for the EMP in fiscal year 2007. This would continue the trend of the past 9 years, in which the annual EMP appropriation has fallen short of the authorized funding level. The UMRBA strongly urges Congress to appropriate full funding of $33.52 million for the EMP in fiscal year 2007.

The administration's proposed $26.8 million budget would support planning and design work on eight habitat restoration projects and construction work on an additional 13 projects. In addition, the fiscal year 2006 request would support modest expansion of targeted research and data management efforts under the Long Term Resource Monitoring Program (LTRMP), which has suffered substantially from the funding shortfalls in recent years. However, to realize its full promise, the EMP requires funding at the full authorized amount of $33.52 million. This would support design work on three additional projects and construction on one additional project. It would also permit accelerated work on several other projects, thereby increasing overall program efficiency. Finally, funding at the full capability level would support LTRMP research on adaptive management, fish and water quality data analysis, and key modeling efforts. Therefore, the UMRBA urges Congress to fund the EMP at its full authorized amount of $33.52 million.

UMRBA is particularly concerned about an apparent directive from OMB that $3 million of fiscal year 2007 EMP funding be devoted to development of a "10-year aquatic ecosystem restoration plan." Such a plan is unnecessary and would duplicate plans that the Corps just completed as part of the Navigation Study. Given the backlog of EMP habitat restoration projects awaiting construction, and the vast number of unmet needs under the LTRMP, it would be misguided to divert construction funds from this important work to develop a plan that is largely duplicative. Congress should direct the Corps to use EMP funds exclusively for construction of habitat restoration projects and long term monitoring, as authorized in the 1999 Water Resources Development Act.

UMRBA recognizes that one of the biggest challenges facing future restoration efforts on the Upper Mississippi River (UMR) will be integrating the work that is currently done under EMP with the new ecosystem/navigation authority being proposed. Congress is currently considering authorization of a new dual-purpose authority for the Corps, as recommended in the navigation feasibility study. For now, however, the EMP remains the single most effective and long-standing UMR ecosystem restoration program. Moreover, the EMP's monitoring element is entirely unique and would not be replicated in the proposed new authority. Therefore, fully funding the EMP is as important today as it has ever been. The EMP must not languish as questions related to future program streamlining and coordination are being addressed.

MAJOR REHABILITATION OF LOCKS AND DAMS (L&D)

Most of the locks and dams on the Upper Mississippi River System are over 60 years old and many are in serious need of repair and rehabilitation. For the past 20 years, the Corps has been undertaking major rehabilitation of individual facilities throughout the navigation system in an effort to extend their useful life. This work is critical to ensuring navigation reliability and safety.

The UMRBA supports the President's fiscal year 2007 budget request for major rehabilitation work at L&D 24 ($3.9 million) and supports increasing the President's request for rehabilitation work at L&D 11 ($27.75 million), L&D 19 ($5.6 million), and Locks 27 ($5.2 million). L&D 11, located near Dubuque, Iowa, is nearly 70 years old. The major rehabilitation project currently underway includes new bulkheads, extensive miter gate rehabilitation, lock chamber and guidewall repairs, and electrical system upgrades. The increase of $7.4 million above the President's request for L&D 11 is needed to fully fund the Stage II contract. Rehabilitation needs are especially urgent at L&D 19, where temporary use of the only available spare lock gates risks closure of the river north of Keokuk, Iowa, if those gates fail. The increase of $156,000 above the President's request for L&D 19, combined with anticipated fiscal year 2006 carryover, is required to fully fund the Stage I upper gate major rehabilitation. L&D 24, located near Clarksville, Missouri, is more than three-fourths through its $87 million rehabilitation. Fiscal year 2007 funding will support work on dam tainter gate anchorages, dam bulkheads, and a bulkhead pickup beam.

Lock 27 is located at a critical juncture on the inland waterways system, downstream of the Illinois and Missouri Rivers on the Chain of Rocks Canal in the St. Louis area. Major rehabilitation needs on this more than 50-year-old structure are extensive, including replacement of lock dates, lift gate machinery, and culvert valves. Fiscal year 2007 would mark the first year of major rehabilitation at the structure. The increase of $1.8 million above the President's request would fund a range of design and construction work on lock lighting, culvert valves, sill anchors, and lock wall tie downs.

The UMRBA also supports funding for a major rehabilitation project that is not included in the President's request: L&D 3 at $4.3 million. Navigation safety and embankment failure have been a concern for over 20 years at L&D 3, and river pilots agree that this is the most dangerous stretch of the Upper Mississippi to navigate. Should there be an accident, the adjacent embankments, which have been severely weakened by age and past accidents, could be breached. In this event, commercial navigation would be curtailed and two large power plants would be forced to shut down. The $4.3 million in funding would be used to complete planning and fully fund the first phase of construction.

OPERATION AND MAINTENANCE (O&M) OF THE UPPER MISSISSIPPI RIVER NAVIGATION SYSTEM

The Corps is responsible for operating and maintaining the Upper Mississippi River System for navigation. This includes channel maintenance dredging, placement and repair of channel training structures, water level regulation, and routine care and operation of 29 locks and dams on the Mississippi River and 7 locks and dams on the Illinois River. The fiscal year 2007 budget request totals approximately $174.36 million for O&M of this river system. These funds are critical to the Corps' ability to maintain a safe and reliable commercial navigation system, while protecting and enhancing the river's environmental values.

Unfortunately, the President's fiscal year 2007 budget represents a further widening of the gap between the amount requested and the amount required for adequate operation and maintenance of the navigation system. In fiscal year 2006, the gap between the President's request and the Corps' capability was $52.14 million. In fiscal year 2007, this shortfall has increased to $89.08 million. For segments of the Upper Mississippi System, this would mean multiple years during which resources have not supported even baseline operation and maintenance, resulting in an increasing backlog and a growing risk of failures and service interruptions. The impacts of these funding shortfalls will be amplified if Congress extends its fiscal year 2006 prohibition on continuing contracts. Responses to these continued fiscal pressures may include reductions in lock operating hours and cancellations of ongoing contracts. Funding beyond the President's request is needed to restore basic service levels, coordinate major maintenance with major rehabilitation at L&D 11 and 19, and purchase stop logs to ensure the Corps' ability to dewater lock chambers for emergency repairs.

The UMRBA supports increased funding for O&M of the Upper Mississippi and Illinois River System to meet routine operation and maintenance needs, and to address the growing unfunded maintenance backlog. The Upper Mississippi River System is simply too valuable to invite disaster through chronic underfunding of basic O&M. For fiscal year 2007, O&M funding totaling $263.44 million is needed on the Upper Mississippi River System to address ongoing needs and critical backlog items.

PREPARED STATEMENT OF THE CITY OF SANTA BARBARA, CALIFORNIA

As your distinguished subcommittee writes the fiscal year 2007 Energy and Water Resources Appropriations Bill, I would like to bring a very important Corps of Engineers' project to your attention. The City of Santa Barbara requests $2,020,000 from the Army Corps of Engineers' (ACOE) Operation and Maintenance (O&M) Account in fiscal year 2007 Energy and Water Development Appropriations Bill for essential annual maintenance dredging of Santa Barbara Harbor's Federal Navigational Channel.

PROJECT JUSTIFICATION

In 1970 Congress authorized (Public Law 91–611, Sec. 114) full funding for ACOE maintenance dredging for the Harbor's Federal Channel to reduce storm damage, shoaling and navigational hazards. Today more than ever, the Harbor continues to serve and support our National interests. The Harbor is home port for the 87 foot U.S. Coast Guard Cutter Blackfin and NOAA R/V Shearwater serving Channel Is-

lands National Marine Sanctuary (CINMS). Blackfin's Harbor location is crucial to its mission of patrolling waters all the way to Morro Bay (100 miles north) and is critical to ocean safety and rescue, together with emerging Homeland Security Defense System (USCG) requirements along the California coastline. Santa Barbara Harbor also provides a staging area, facilities and resources required for oil spill prevention and response, and is a designated harbor of safe refuge.

Every winter, approximately 400,000 cubic yards of sand piles up at Santa Barbara Harbor. Santa Barbara Harbor impedes the transport of sand downcoast resulting in shoaling of the Federal Channel and potential coastal erosion at several coastal communities. The Corps of Engineers conducted comprehensive studies of the Harbor in the 1950's and determined that annual dredging of the Harbor was necessary to maintain navigability and nourish downcoast beaches preventing erosion. It is essential to dredge at a minimum 250,000 cubic meters (c.m.) of sand from the Federal Channel every year to maintain year round navigability into and out of the Harbor.

A recap of the last several years demonstrates the continuing trend of reduced dredge funding, which could impact Harbor operations and eventually accumulated sand could close the channel during winter storms.

—*Fiscal Year 2005*.—Harbor inadvertently left out of President's Budget Submittal (approximately $1.8 million was eventually restored and reprogrammed).

—*Fiscal Year 2006*.—President's Budget Submittal included $1.408 million (Congressional actions reduced dredge funding to $1.267 million).

—*Fiscal Year 2007*.—President's Budget Submittal includes $1.2 million (Corps of Engineers indicates funding obligations of approximately $2 million).

On average, the Harbor has received approximately $1.8 million annually to undertake and complete maintenance dredging of the Harbor Federal Navigational Channel.

FUNDING REQUEST

The President's fiscal year 2007 budget recommendation includes $1,200,000 for operations and maintenance dredging for Santa Barbara Harbor. I respectfully request that the U.S. House of Representatives, through your subcommittee, increase that level of funding to $2,020,000 for fiscal year 2007 Corps of Engineers' Maintenance and Operation Account for dredging of the Harbor.

Thank you for the opportunity to submit this statement.

PREPARED STATEMENT OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

FISCAL YEAR 2007 WATER RESOURCES DEVELOPMENT APPROPRIATIONS

PROJECT	REQUEST
MURRIETA CREEK FLOOD CONTROL PROJECT: Construction General	$11,500,000
HEACOCK AND CACTUS CHANNELS: Section 205—Design and Construction	6,200,000
NORCO BLUFFS BANK STABILIZATION PROJECT: Construction General	1,000,000
SAN JACINTO & UPPER SANTA MARGARITA RIVER WATERSHEDS SPECIAL AREA MANAGEMENT PLAN (SAMP): General Investigations	532,000
SANTA ANA RIVER—MAINSTEM: Construction General	71,300,000

MURRIETA CREEK FLOOD CONTROL, ENVIRONMENTAL RESTORATION AND RECREATION PROJECT

Murrieta Creek poses a severe flood threat to the cities of Murrieta and Temecula. Over $12 million in damages was experienced in the two cities as a result of Murrieta Creek flooding in 1993. The 1997 Energy and Water Appropriations Act dedicated $100,000 to conduct a Reconnaissance Study of watershed management in the Santa Margarita Watershed "including flood control, environmental restoration, stormwater retention, water conservation and supply, and related purposes". The study effort was initiated in April 1997 and completed the following December. The Reconnaissance Study identified a Federal interest in flood control on the Murrieta sub-basin, and recommended moving forward with a detailed Feasibility Study. This was completed in September 2000 and recommended the implementation of Alternative 6, the Locally Preferred Plan (LPP) for flood control, environmental restoration and recreation. The LPP was endorsed by the Cities of Temecula and Murrieta and by the community as a whole. H.R. 5483, the Energy and Water

Appropriations Act of 2000, included specific language authorizing the Corps to construct "the locally preferred plan for flood control, environmental restoration and recreation described as Alternative 6, based on the Murrieta Creek Feasibility Report and Environmental Impact Statement dated September 2000".

The Murrieta Creek Flood Control, Environmental Restoration and Recreation Project is being designed and will be constructed in four distinct phases. Phases 1 and 2 include channel improvements through the city of Temecula. Phase 3 involves the construction of a 250-acre detention basin, including a 160-acre environmental restoration site and over 50 acres of recreational facilities. Phase 4 of the project will include channel improvements through the city of Murrieta. Equestrian, bicycle and hiking trails as well as a continuous vegetated habitat corridor for wildlife are components of the entire 7-mile-long project.

The Omnibus Appropriations Bill for fiscal year 2003 provided $1 million for a new construction start for this critical public safety project. Construction activities on Phase 1 of the project commenced in the Fall of 2003. The appropriations for fiscal year 2004 and additional funds allocated through re-programming allowed the Corps to continue construction on Phase 1, which was completed in December 2004. Phase 2 traverses Old Town Temecula, one of the hardest hit areas during the flooding of 1993. The Corps anticipates having a Phase 2 construction contract ready to award in the Winter of 2007. The District, therefore, respectfully requests the committee's support of an $11.5 million appropriation in fiscal year 2007 to allow the Corps to complete the Design Documentation Report, complete plans and specifications on Phase 2, and initiate construction on Phase 2 of the long awaited Murrieta Creek Flood Control, Environmental Restoration and Recreation Project.

HEACOCK AND CACTUS CHANNELS PROTECTION OF MARCH AIR RESERVE BASE AND ADJACENT NEIGHBORHOODS

Heacock and Cactus Channels are undersized, earthen channels that border the eastern and northern boundary of the March Air Reserve Base. Substantial vegetation becomes established within both channels and impedes the conveyance of tributary storm flows to an existing outlet located downstream. Storm flows overtop the Cactus Channel and traverse the March Air Reserve Base causing major disruption of the Base's operation, including the fueling of airplanes and transport of troops and supplies. The inadequate size of the Heacock Channel also causes storm drains from adjacent neighborhoods within the city of Moreno Valley to back up, flooding local residential areas and impeding access to these areas by residents as well as emergency services. The record rainfall of 2004/2005 also caused extensive erosion along Heacock Avenue jeopardizing existing utilities within the road right of way and cutting off access to approximately 700 residences.

Under Section 205 of the Continuing Authorities Program (CAP), the Corps received $100,000 in fiscal year 2005 and completed an Initial Appraisal Report which determined the feasibility of proceeding with a project to provide flood protection to this sensitive area. With the $546,000 received in fiscal year 2006 the Corps completed a Project Management Plan, executed a Feasibility Cost Sharing Agreement and will complete the Detailed Project Report by Fall 2006. The Corps expects to initiate plans and specification during the Fall 2006 and be ready to award a contract for construction by Spring 2007, providing the needed funding is allocated during this fiscal year.

The District requests support from the committee for a fiscal year 2007 appropriation of $6,200,000 under Section 205 to complete the design and specifications and begin construction of the critically needed project.

NORCO BLUFFS BANK STABILIZATION PROJECT

The Norco Bluffs Bank Stabilization project consists of a soil cement toe protection structure constructed to the 100-year flood level at the base of the bluff, and a stable earthen buttress fill constructed to the top of the bluff along the Santa Ana River, in the city of Norco. The bluff stabilization work extends easterly from the Interstate 15 bridge to near Center Avenue. The estimated total cost of the project was approximately $14 million. The Corps received a total of $7.2 million in construction funds in the fiscal year 1998, fiscal year 1999 and fiscal year 2000 Federal budgets for the project. Since the available Federal funding fell short of that necessary to construct the entire project at once, the Corps decided to break it into two phases. Phase 1, which was completed in May 2000, includes a soil cement toe protection structure along the entire length of the project, as well as construction of approximately 1,300 feet of buttress fill in the most critical reach of the bluffs between Valley View and Corona Avenues. The Phase 2 contract involved the construction of the balance of the buttress fill. Construction of most of Phase 2 was

completed in December 2003, with the exception of hydroseeding the slopes, which was differed until the appropriate season to ensure successful establishment. Unfortunately, the record rainfall of the 2004/2005 season caused damages to the project that need to be repaired in order to complete the project and turn it over.

The District requests support from the committee for a fiscal year 2007 appropriation of $1,000,000 to complete the repairs, hydroseed the slopes and turn the project over to the District.

SAN JACINTO & UPPER SANTA MARGARITA RIVER WATERSHEDS SPECIAL AREA MANAGEMENT PLAN

The County of Riverside recognizes the interdependence between the region's future transportation, habitat, open space and land-use/housing needs. Increased developmental pressure in the region has challenged local, State, and Federal agencies to respond to this unprecedented growth. In 1999, work was initiated on Riverside County's Integrated Project (RCIP) to determine how to best address this growth. In 2003 the County adopted a new General Plan and Multi-Species Habitat Conservation Plan (MSHCP) to address regional conservation and development plans that protect entire communities of native plants and animals, while streamlining the process for compatible economic development in other areas.

The Corps began development of a Special Area Management Plan (SAMP) for both the San Jacinto and Upper Santa Margarita Watersheds in 2001. This comprehensive planning effort will be used to assist Federal, State and local agencies with their decision making and permitting authority to protect, restore and enhance aquatic resources, while accommodating various types of development activities. The final product of the SAMP will be the establishment of an abbreviated or expedited regulatory permitting process by the Corps under Section 404 of the Clean Water Act. This process will increase regulatory efficiency and promote predictability to the regulated public. The plan will also build on the protection of high value resource areas, as envisioned in the MSHCP.

The District requests support from the committee for a fiscal year 2007 appropriation of $532,000 to complete the work on the Nation's largest SAMP for the San Jacinto and Upper Santa Margarita Watersheds.

SANTA ANA RIVER—MAINSTEM

The Water Resources Development Act of 1986 (Public Law 99–662) authorized the Santa Ana River—All River project that includes improvements and various mitigation features as set forth in the Chief of Engineers' Report to the Secretary of the Army. The Boards of Supervisors of Orange, Riverside and San Bernardino Counties continue to support this critical project as stated in past resolutions to Congress.

For fiscal year 2007, an appropriation of $71.3 million is necessary to provide funding for the following activities:

—$23 million to initiate construction activities on several features within "Reach 9" of the Santa Ana River immediately downstream of Prado Dam. This segment of the Santa Ana River project is the last to receive flood protection improvements. The streambed existing today in a relatively natural state would receive only localized levee and slope revetment treatment to protect existing development along its southerly bank. The funding will also be used for landscape enhancement of the river banks.

—$13.3 million to fund required mitigation, complete tunnel repairs and conduct a water quality study of the Seven Oaks Dam project.

—$35 million to continue with the construction of improvements to Prado Dam's outlet works and embankment, and construction of dikes to protect the properties within the Prado Dam basin.

The District respectfully requests that the committee support an overall $71,300,000 appropriation of Federal funding for fiscal year 2007 for the Santa Ana River Mainstem Project.

PREPARED STATEMENT OF THE BOARD OF LEVEE COMMISSIONERS FOR THE YAZOO-MISSISSIPPI DELTA

On behalf of its citizens in 10 counties in the Mississippi Delta, the Yazoo-Mississippi Delta Levee Board joins with the other local flood control operations within the Mississippi Valley Flood Control Association, in requesting full U.S. Army Corps of Engineers capacity funding of $510 million for the Mississippi River and Tributaries Project (MR&T).

The Corps of Engineers projects that its engineering, construction and maintenance capabilities in fiscal 2007 amount to $510 million, but the administration's budget for this critical and highly cost-effective project for the Nation's heartland is only $278 million. We urge Congress, as it has before, to fully fund this vitally needed flood control project which has performed at a benefit-to-cost-ratio of an astounding 24-to-1 over the course of its history.

In addition to its flood control benefits, the MR&T also provides almost $1 billion in navigation savings on the Mississippi River each year. Conceived and designed as a multi-component system to convey floodwaters that pass through the lower Mississippi Valley to the Gulf of Mexico, its components drain 41 percent of the continental United States. It simply must be completed.

A line-item-by-line-item breakdown of the MR&T's proposed 2007 works and cost estimates, along with suggested administration funding and Corps capabilities is attached and follows. We urge Congress to inspect this detailed project analysis and are confident that, as the branch of government most directly responsible to the people, it will reach favorable funding decisions.

For our part in this very important process, we will focus our testimony on several aspects of one greater issue which we know to be of primary concern and importance to the citizens of our levee district.

The Upper Yazoo Project (UYP), for which my board is proud to serve as local sponsor, represents a perfect model for what a flood control project should be, anywhere in the country. It is a perfect example of how critically-needed work can progress smoothly and without controversy or public upheaval.

Designed to restore the Yazoo/Coldwater/Tallahatchie river system to its flow capacity and eliminate damaging interbasin transfer, the UYP has already provided flood protection to Greenwood, and upon its completion, would also protect the additional areas of Marks, Lambert, Moorhead, Mississippi Delta Community College, Tutwiler, Glendora, Sumner and Webb.

The project is two-thirds complete. It needs only adequate funding to bring long-needed relief to thousands of people and their properties. Yet the proposed Federal budget for this public policy initiative contains not a dime. Not a cent. Such is an enormous injustice.

We urge the Congress to fully fund in 2007 the Upper Yazoo Project at the Corps' capability of $22.5 million. The facts make the best case for the Upper Yazoo Project.

The remaining stage—the final one-third—of the UYP is its most critical. The remaining channels to be cleared convey the waters from three-fourths of Mississippi's flood control reservoirs and 74 percent of all the water from the State's hill section. Those reservoirs have now exceeded their originally-projected lifespans and we cannot continue to expose them to needless stress, which they are almost annually, when existing stream capacities won't always allow timely release of their waters.

The very successful Mississippi Delta Headwater Project (formerly DEC) has been very helpful in attempting to control the waters which flow from the hills to the Delta. We ask that it be funded to the Corps capability of $25 million, but again, the success of that project only makes sense within the context of the UYP.

It is also critically important to note that for the UYP to proceed, it must be fully funded in the 2007 budget. With the longstanding practice of continuing construction contracts for Corps of Engineers' projects now eliminated, this project has come to a standstill simply for lack of funds.

This badly-needed work has already been delayed from 8 to 10 months this year because its Corps line item has run out of money and under the new rules, it will continue to be delayed in 2007 as well, unless Congress fully funds it at the prescribed $22.5 million level.

We implore the Congress not to make the same sort of mistake, the effects of which we have so tragically seen in the wake of Hurricane Katrina. Let not the question be asked: Why wasn't something done when they knew about the danger?

Because of the stealthy nature of flooding in the unique area that is the Mississippi Delta, dangerously high water levels can appear literally overnight. We know these waterways must be restored to their capacities. We know that lives and property are threatened in the absence of that. We know we need to do this and we know the only issue is money.

Should a mother, or God forbid her child, fall victim to the present dangers which are only amplified through procrastination, this year, then the all-too-easy anthem of "wait until next year," will ring very hollow indeed.

MISSISSIPPI VALLEY FLOOD CONTROL ASSOCIATION—FISCAL YEAR 2007 CIVIL WORKS REQUESTED BUDGET—MISSISSIPPI RIVER AND TRIBUTARIES APPROPRIATIONS

PROJECT AND STATE	PRESIDENT'S BUDGET	MVFCA REQUEST
SURVEYS, CONTINUATION OF PLANNING AND ENGINEERING & ADVANCE ENGINEERING & DESIGN:		
Memphis Harbor, TN	.....	.....
Germantown, TN	.....	.....
Lower Steele Bayou	.....	$100,000
Homochitto River	.....	100,000
Memphis Metro Storm Water Management, TN	.....	152,000
Bayou Meto, AR	.....	1,553,000
Southeast Arkansas	.....	800,000
Coldwater Basin Below Arkabutla Lake, MS	$300,000	495,000
Quiver River, MS	.....	100,000
Spring Bayou, LA	.....	500,000
Point Coupee to St. Mary Parish, LA	.....	100,000
Atchafalaya Basin Floodway Land Study, LA	100,000	300,000
Alexandria, LA to the Gulf of Mexico	200,000	200,000
Morganza, LA to the Gulf of Mexico	.....	4,000,000
Donaldsonville, LA to the Gulf of Mexico	.....	75,000
Tensas River, LA	.....	.....
Donaldsonville Port Development, LA	.....	500,000
Collection & Study of Basic Data	400,000	735,000
SUBTOTALS—SURVEYS	1,000,000	4,157,000
ADVANCED ENGINEERING & DESIGN	.....	5,553,000
TOTAL GENERAL INVESTIGATIONS	1,000,000	9,710,000
CONSTRUCTION:		
St. John's Bayou—New Madrid Floodway, MO	2,500,000	15,000,000
Eight Mile Creek, AR	.....	.....
Helena & Vicinity, AR	.....	.....
Grand Prairie Region, AR	.....	33,000,000
Bayou Meto, AR	.....	11,847,000
West Tennessee Tributaries	.....	500,000
Nonconnah Creek, TN	.....	500,000
Wolf River, Memphis, TN	.....	1,500,000
Augusta to Clarendon Levee, Lower White River	.....	500,000
St. Francis Basin, MO & AR	.....	11,840,000
Yazoo Basin, MS	.....	73,275,000
Atchafalaya Basin, LA	27,600,000	30,000,000
Atchafalaya Basin Floodway, LA	4,840,000	10,809,000
MS Delta Region, LA	3,212,000	3,933,000
Channel Improvements, IL, KY, MO, AR, TN, MS & LA	43,092,000	47,392,000
Mississippi River Levees, IL, KY, MO, AR, TN, MS & LA	40,756,000	118,800,000
SUBTOTAL—CONSTRUCTION	122,000,000	358,896,000
SUBTOTAL—MAINTENANCE	147,000,000	226,327,000
SUSPENSION FUND	8,000,000	.....
SUBTOTAL—MISSISSIPPI RIVER & TRIBUTARIES	278,000,000	594,933,000
LESS REDUCTION FOR SAVINGS & SLIPPAGES	.....	84,933,000
GRAND TOTAL—MISSISSIPPI RIVER & TRIBUTARIES	278,000,000	510,000,000

MISSISSIPPI VALLEY FLOOD CONTROL ASSOCIATION—FISCAL YEAR 2007 CIVIL WORKS REQUESTED BUDGET—MISSISSIPPI RIVER AND TRIBUTARIES PROJECT MAINTENANCE

PROJECT	PRESIDENT'S BUDGET	MVFCA REQUEST
Wappapello Lake, MO	$4,768,000	$7,734,000
Mississippi River Levees	6,400,000	9,000,000
Mississippi River Channel Maintenance	60,280,000	66,600,000

MISSISSIPPI VALLEY FLOOD CONTROL ASSOCIATION—FISCAL YEAR 2007 CIVIL WORKS REQUESTED BUDGET—MISSISSIPPI RIVER AND TRIBUTARIES PROJECT MAINTENANCE—Continued

PROJECT	PRESIDENT'S BUDGET	MVFCA REQUEST
Memphis Harbor, TN	1,013,000	1,942,000
Pidgeon Industrial Harbor, TN	.....	250,000
Helena Harbor, AR	63,000	402,000
Greenville Harbor, MS	30,000	437,000
Vicksburg Harbor, MS	71,000	385,000
St. Francis River & Tribs, AR	6,300,000	15,250,000
White River Backwater, AR	1,200,000	1,500,000
North Bank, Arkansas River, AR	560,000	560,000
South Bank, Arkansas River, AR	310,000	310,000
Boeuf & Tensas Rivers, LA	2,600,000	4,157,000
Red River Backwater, LA	3,350,000	6,650,000
Yazoo Basin, Sardis Lake, MS	7,199,000	12,425,000
Yazoo Basin, Arkabutla Lake, MS	6,170,000	9,251,000
Yazoo Basin, Enid Lake, MS	5,397,000	12,532,000
Yazoo Basin, Grenada Lake, MS	5,690,000	10,949,000
Yazoo Basin, Greenwood, MS	620,000	1,020,000
Yazoo Basin, Yazoo City, MS	770,000	770,000
Yazoo Basin, Main Stem, MS	1,072,000	1,929,000
Yazoo Basin, Tributaries, MS	830,000	830,000
Yazoo Basin, Whittington Aux Channel, MS	430,000	430,000
Yazoo Basin, Big Sunflower, MS	209,000	2,209,000
Yazoo Basin, Yazoo Backwater, MS	468,000	734,000
Lower Red River, South Bank, LA	66,000	66,000
Bonnet Carre, LA	2,702,000	5,252,000
Old River, LA	9,747,000	17,840,000
Atchafalaya Basin, LA	12,532,000	27,500,000
Atchafalaya Basin Floodway, LA	2,605,000	3,059,000
Baton Rouge Harbor Devil's Swamp, LA	17,000	715,000
Mississippi Delta Region, LA	241,000	349,000
Bayou Cocodrie & Tribs, LA	56,000	56,000
Inspection of Completed Works	1,850,000	1,850,000
Mapping	1,384,000	1,384,000
TOTAL MR&T MAINTENANCE	147,000,000	226,327,000

PREPARED STATEMENT OF THE USA RICE FEDERATION

This is to convey the rice industry's request for fiscal year 2007 funding for selected programs under the jurisdiction of your respective subcommittees. The USA Rice Federation appreciates your assistance in making this letter a part of the hearing record.

The USA Rice Federation is the national advocate for all segments of the rice industry, conducting activities to influence government programs, developing and initiating programs to increase worldwide demand for U.S. rice, and providing other services to increase profitability for all industry segments. USA Rice members are active in all major rice producing States: Arkansas, California, Florida, Louisiana, Mississippi, Missouri, and Texas. The USA Rice Producers' Group, the USA Rice Council, the USA Rice Millers' Association, and the USA Rice Merchants' Association are members of the USA Rice Federation.

USA Rice understands the budget constraints the committee faces when developing the fiscal year 2006 appropriations bill. We appreciate your past support for initiatives that are critical to the rice industry and look forward to working with you to meet the continued water and related needs of the rice industry in the future.

The Mississippi River Valley alluvial aquifer is the primary source of irrigation water for one of the major rice-producing areas in the United States. Groundwater is being withdrawn at such a rate that the aquifer is in danger of being permanently damaged. Irrigation wells are failing. Loss of rice production in this area would result in severe economic and social repercussions to the local, State, and national economies.

Rice producers continue to seek new sources of irrigation for their crops. In many rice-growing regions the aquifers used by rice farmers are the same aquifers used

by local metropolitan populations. Some of these vital aquifers are at risk. Water levels are dropping fast due to deficit rainfall and expanding use from industrial, agricultural, and metropolitan users. Rice producers are working to build new sources of irrigation. The programs listed below are cost-share programs to help rice producers ensure there will be a plentiful water supply for their rice crops and their neighbors in the city. By using surface water from man-made reservoirs, rivers or bayous to irrigate rice crops, these precious aquifers can be saved for future generations. These water projects also provide invaluable wildlife habitat.

To address these critical water needs the USA Rice Federation supports the following:

White River Irrigation Demonstration Project.—Full funding to continue construction on this important Demonstration Project. This project is located in the major rice-growing region of East Arkansas and will help provide the critical water resources necessary for rice production, which plays such a vital role in the economy of Arkansas.

Bayou Meto Basin.—Continued construction funding for this project located in East Central Arkansas in Lonoke, Pulaski, Prairie, Jefferson, and Arkansas counties.

Boeuf Tensas Project.—Continued funding for work on this water project located in portions of Jefferson, Lincoln, Desha, and Chicot counties in Arkansas, as well as portions of Northeast Louisiana.

For California, a very critical wetland wildlife habitat enhancement program was authorized by Section 3406(b)22 of the Central Valley Project Improvement Act. Unfortunately, the funds were sunset in 2002. When fully funded, this program provided funding for the winter flooding of 35,000 to 40,000 acres of important rice wetland habitat in the Pacific Flyway of California. These acres are not only critical to the health of the Flyway for migrating waterfowl, but are also designated as Shorebird Habitat of International Significance by the Western Hemisphere Shorebird Reserve Network. USA Rice supports continuation of the winter flooding incentives program provided by Section 3402(b)22 of the Central Valley Project Improvement Act and requests restored funding for this important effort.

The rice industry also supports continued funding for the Mississippi River and Tributaries Project, and within that, the St. Francis Basin Project which provides flood control and drainage from Cape Girardeau, Missouri to Helena, Arkansas. We also support the St. John's Bayou Project in Missouri and urge that funding be maintained for this project.

Please feel free to contact us if you would like further information about the programs we have referenced. Additional background information is available for all of the programs listed, however, we understand the volume of requests the committee receives and have restricted our comments accordingly.

Thank you for your consideration of our recommendations.

PREPARED STATEMENT OF THE CITY OF SAN MARCOS, TEXAS

Mr. Chairman and members of the subcommittee, on behalf of the City of San Marcos, Texas, I am pleased to submit this statement in support of our request for an earmark of $439,000 for a U.S. Army Corps of Engineers Section 206 Ecosystem Restoration Project for the San Marcos River in the fiscal year 2007 bill.

The City of San Marcos seeks this allocation for the development of the Detailed Project Report/Integrated Environmental Assessment (DPR/EA) as the next step toward completing a $4,540,000 project with Federal and local match to restore degraded aquatic and terrestrial habitat in the upper San Marcos River.

San Marcos is located in south central Texas in Hays County, approximately 30 miles southwest of Austin, Texas. The proposed restoration area is located within the city limits of San Marcos along and within the San Marcos River and its headwaters. The study area consists of an approximate 1.0-mile stretch of the San Marcos River and associated riparian corridor. The ecosystem restoration project will restore and enhance degraded aquatic and terrestrial habitat along and within the San Marcos River.

The spring-fed San Marcos River offers one of rarest aquatic ecosystems found in the United States. The headwaters of the river originate from underground springs from the Edwards Aquifer, producing millions of gallons of crystal clear, constant temperature water daily. The river creates a unique ecosystem supporting five threatened or endangered species that live in the San Marcos River (San Marcos salamander, fountain darter, Texas wild rice, San Marcos gambusia, and Comal Springs riffle beetle).

The San Marcos River has attracted humans to its banks for more than 12,000 years, making San Marcos one of the oldest continuously-inhabited places in the United States. The City of San Marcos has strived for the past 40 years to protect the river by establishing parks along its banks and restricting intense development.

Still, the constant use of the popular river over many decades has impacted the riparian and aquatic habitat of the river, requiring restoration of this valuable waterway. The San Marcos River and associated tributaries have experienced aquatic ecosystem degradation due to a variety of human factors. Impoundment of water upstream, in its tributaries, and within the study area has altered the normal flow regime of the San Marcos River. The native aquatic plant communities within the San Marcos River have been diminished by invasive exotic and generalist plant species.

Increased nutrient and sediment loads from overland surface flow, tributary runoff, non-point sources and storm water drainage have reduced water quality and in-stream habitat values within the river. The majority of the bottomland plant community within the study area is highly disturbed and fragmented due primarily to urban encroachment, installation of hardpan surfaces, recreational disturbance and invasion of non-native plant species.

This degradation has resulted in the loss of high-quality in-stream and riparian habitat for plant and wildlife species within the study area. The proposed restoration plan will help restore aquatic and terrestrial habitat that has degraded due to human activity, including critical habitat for the federally-listed species.

The City of San Marcos applied for U.S. Army Corps of Engineers Section 206 Aquatic Restoration Grant funds in 2002 to turn around the trend toward degradation in our river corridor. A Preliminary Restoration Plan (PRP) was developed by the U.S. Army Corps of Engineers and submitted in March 2003. The PRP was approved and moved forward to the next phase, the development of a Detailed Project Report (DPR).

However, at this stage, Federal funding for this program was reduced, placing the City of San Marcos PRP on the back burner. Funding this project is essential to restore integrity to the San Marcos River, the central point of our community for tourism, recreation, and quality of life.

This project will directly benefit the environment by increasing biodiversity, carrying capacity, stability and productivity of native plant and wildlife species endemic to the area. Additional benefits include improvement of existing recreational opportunities, enhancement of water quality, and improvement of natural aesthetics.

Specifically, the project will restore and sustain approximately 22.0 acres of riparian woodland habitat, 6.0 acre of tall grass prairie habitat, 4.0 acres of emergent wetland habitat and 16.0 acres of aquatic habitat within a highly urbanized area. The total project cost is estimated at $4,540,000, which will be cost-shared 65 percent Federal Government and 35 percent City of San Marcos. The Federal share is $2,951,000 with a local match of $1,589,000.

The only COE Section 206 projects that will now receive funding are those that have Congressional support.

Therefore, we ask you to approve a special appropriation earmark for $439,000 for the San Marcos River Section 206 Project to fund the restoration. Thank you for your consideration of this project.

PREPARED STATEMENT OF THE NATURE CONSERVANCY

Mr. Chairman and members of the subcommittee, I appreciate this opportunity to present The Nature Conservancy's recommendations for the Army Corps of Engineers' fiscal 2007 appropriations. We understand and appreciate that the subcommittee's ability to fund programs within its jurisdiction is limited by the tight budget situation but appreciate your consideration of these important programs. My name is Jimmie Powell and I am the Director of Government Relations at the Conservancy.

The Nature Conservancy is an international, nonprofit organization dedicated to the conservation of biological diversity. Our mission is to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. Our on-the-ground conservation work is carried out in all 50 States and in 27 foreign countries and is supported by approximately 1 million individual members. We have helped conserve nearly 15 million acres of land in the United States and Canada and more than 102 million acres with local partner organizations globally.

The Conservancy owns and manages approximately 1,400 preserves throughout the United States—the largest private system of nature sanctuaries in the world. We recognize, however, that our mission cannot be achieved by core protected areas alone. Therefore, our projects increasingly seek to accommodate compatible human uses, and especially in the developing world, to address sustained human well-being.

The Conservancy has several concerns with policies required in the fiscal 2006 Energy and Water Appropriations bill and recommends some revisions to those provisions. As the largest non-Federal sponsor of ecosystem restoration projects (in numbers of projects, not total cost) these limitations have had a significant impact on our partnership with the Corps. The Conservancy urges the subcommittee to lift the ban on "new starts"/project advancement, and to revise the restrictions on re-programming of funds. The ban on "new starts"/project advancement has halted a number of our restoration projects which are widely supported by local communities and important to local biodiversity. The Conservancy also urges the subcommittee to revise the limitations on re-programming. Several Conservancy projects, which had conference report language indicating Congressional funding intent, had funds re-programmed and now the Corps cannot reprogram the funds back to those projects.

The Conservancy urges the subcommittee to support the following appropriation levels in the fiscal 2007 Energy and Water Development Appropriation bill:

Construction General Priorities

Section 1135: Project Modification for the Improvement of the Environment.—The Section 1135 Program authorizes the Army Corps of Engineers (Corps) to restore areas damaged by existing Corps projects. This program permits modification of existing dams and flood control projects to increase habitat for fish and wildlife without interrupting a project's original purpose. This program continues to be in extremely high demand with needs far greater than the $30 million appropriated in fiscal 2006. This financial shortfall has stopped many important projects. The Conservancy is the non-Federal cost share partner on six ecologically significant Section 1135 restoration projects. These projects include Spunky Bottoms, a floodplain restoration/reconnection project on the Illinois River, which we seek $150,000 in fiscal 2007; and Chain Bridge Flats, DC/MD/VA, a floodplain restoration on the Potomac River which requires $210,000 in fiscal year 2007. In order to further reduce the funding backlog, the Conservancy strongly encourages a repeat of $30.0 million for the Section 1135 program in fiscal 2007, an increase over the President's $15.0 million request.

Section 206: Aquatic Ecosystem Restoration.—Section 206 is a newer Corps program that authorizes restoration of aquatic habitat regardless of past activities. This is another popular restoration program with demand far exceeding the $30 million appropriated for fiscal year 2006. The Conservancy is the non-Federal cost-share partner on 11 Section 206 projects. These projects restore important fish and wildlife habitats. Ecologically significant projects for which the Conservancy is the non-Federal sponsor include: Mad Island, TX, a coastal restoration project that needs $1.475 million to continue construction; and Camp Creek, OR, a headwaters stream restoration project that needs $575,000 to continue the feasibility study. In order to further reduce the funding backlog, the Conservancy strongly encourages a repeat of $30 million for the Section 1135 program in fiscal 2007 an increase over the President's $19.9 million request.

Upper Mississippi River System Environmental Management Program.—The Environmental Management Program (EMP) is an important Corps program that constructs habitat restoration projects and conducts long-term resource monitoring of the Upper Mississippi and Illinois Rivers. The EMP operates as a unique Federal-State partnership affecting five States (Illinois, Iowa, Minnesota, Missouri, and Wisconsin). The EMP was reauthorized in WRDA 1999 with an increased authorization in the amount of $33.2 million. The Conservancy supports full funding of $33.2 million for fiscal year 2007, an increase over the President's $27.0 million request.

Estuary Habitat Restoration Program.—The Estuary Habitat Restoration Program was established with the intent to restore 1 million acres of estuary habitat by 2010. This multi-agency program will promote projects that result in healthy ecosystems that support wildlife, fish and shellfish, improve surface and groundwater quality and quantity, provide flood control; and provide outdoor recreation opportunity. The Conservancy supports the President's $5.0 million request for fiscal year 2007.

South Florida Everglades Ecosystem Restoration Program.—The Everglades are home to a profusion of bird species, with 347 species recorded within Everglades National Park alone. The ecosystem provides breeding habitat for roseate spoonbills, snail kite, southern bald eagle, Cape sable seaside sparrow, wood stork, white ibis, glossy ibis and 11 species of egrets and herons. Beginning 60 years ago, the Corps

began building projects for human benefit that shunted water away from the Everglades. Many factors, including these flood control projects and agricultural and urban development, have contributed to the reduction and degradation of the wetlands ecosystem. Restoration of this globally significant region is a priority for the Conservancy. The Conservancy requests $207 million in the South Florida Everglades Ecosystem Restoration Program in fiscal year 2007. This program includes the following suite of restoration programs:

—*Modified Water Deliveries to Everglades National Park ($35 million)*.—This project balances fresh water crossing Tamiami Trail and entering the park. Completing this project is a pressing concern to restore habitat and stave off the danger of an estuarine collapse in Florida Bay.

—*Critical Projects Construction ($15 million)*.—This special program is made up of nine projects that are critical to the future of the entire ecosystem's restoration. Fiscal year 2007 projects will include completion of construction on the Lake Okeechobee Water Retention Areas and Ten Mile Creek projects and continuing construction on the Seminole Big Cypress project.

—*Kissimmee River Restoration Construction ($50 million)*.—This project involves restoring water-level fluctuations and seasonal discharges from Lakes Kissimmee, Cypress and Hatchineha in the upper basin. This project features 22 miles of canal backfilling and structure removal along with land acquisition of over 100,000 acres.

—*Comprehensive Everglades Restoration Plan (CERP) Project Construction ($20 million)*.—Components of this plan include aquifer storage and recovery; construction of surface water storage reservoirs; construction of storm water treatment areas; seepage management; removal of 240 miles of barriers to sheet flow; and reuse of wastewater at two regional plants.

—*Central and Southern Florida Project to include the C111, CERP, and STA 1 East projects ($87 million)*.—This program includes the Upper St. Johns, Manatee Protection, C–51 and STA–1E, C–111, Miami Canal Study and 10 initial projects of the CERP. Recent progress includes initial construction of manatee pass gates, with all gates expected to be completed this year; completed construction on the C–51 and transfer of operations to the South Florida Water Management District; and continuing design for the next phase of buffer construction for the C–111 project.

General Investigation Priorities

Savannah Basin Comprehensive Water Resources Study.—The Savannah Basin Comprehensive Water Resources Study will enable the Corps and other partners to gain a better understanding of the influence of hydrologic processes such as timing, duration, frequency, magnitude, and rate of change of river flows on the river's ecology. The Nature Conservancy, under a cooperative agreement funded by the Corps and its cost share partners, Georgia and South Carolina, developed a set of ecosystem flow recommendations for the Savannah River Basin. A test release of the new flow recommendation was conducted March 15–18, 2004 and again in fall 2005. The Conservancy supports $250,000 in fiscal year 2007. This study is not included in the President's budget.

Willamette River Floodplain Study.—This project will contribute to the long-term restoration of floodplain habitat in the Willamette River Basin, an important step toward the recovery of several threatened fish species listed under the Endangered Species Act. The restoration efforts associated with the Willamette River Floodplain Restoration Study, including increasing floodplain connectivity and replanting riparian forests, will contribute to the Corps' ability to reduce river temperatures and meet their obligations under the Clean Water Act. This project also leverages a unique national partnership between the Corps and the Conservancy, the Sustainable Rivers Project, to improve dam management in order to protect the ecological health of rivers and surrounding natural areas while continuing to provide services such as flood control and power generation. The Conservancy supports $436,000 in fiscal year 2007. This study is not included in the President's budget.

Operations and Maintenance Priorities

Missouri River Fish and Wildlife Recovery.—The Missouri River has an extensive and diverse array of aquatic and terrestrial systems that have had a dominant influence on the basin's biological diversity. A predictable yet dynamic interaction of aquatic and terrestrial ecological processes support more than 500 species of mussels, fish, amphibians, reptiles, birds and mammals. The Corps has completed 30 projects along the river in the lower four States (Iowa, Kansas, Missouri and Nebraska) resulting in over 40,000 acres of restored aquatic and floodplain habitat. The Missouri River Fish and Wildlife Recovery Program will not only enhance these

restoration efforts, but complement protection and restoration efforts by the Bureau of Indian Affairs, Bureau of Land Management, Bureau of Reclamation, Department of Defense, U.S. Forest Service, U.S. Fish and Wildlife Service, National Park Service and the Natural Resources Conservation Service in the entire river basin. Three species dependent on the Missouri River are federally-listed as endangered or threatened, two are candidates for Federal listing, and at least eight are species of special concern to State or Federal fish and wildlife management agencies. The Conservancy supports an appropriation in the amount of $85.0 million in fiscal year 2007.

Thank you for the opportunity to present The Nature Conservancy's comments on the Energy and Water Appropriations bill. We recognize that you receive many worthy requests for funding each year and appreciate your consideration of these requests and the generous support you have shown for these and other conservation programs in the past. If you have any further questions, please do not hesitate to contact me.

PREPARED STATEMENT OF THE OUACHITA RIVER VALLEY ASSOCIATION

Mr. Chairman and distinguished members of the committee, thank you for the opportunity to present this testimony. The Ouachita-Black Navigation Project is the backbone of much of the economy of our region supporting employment, municipal water supplies, recreation, wildlife habitat and conservation of the endangered Sparta Aquifer. The Project was authorized by the River and Harbor Act of 1950 and modified by the River and Harbor Act of 1960. The 337-mile Ouachita-Black Navigation System is the only commercially navigable waterway serving the 11 Parishes and Counties in northeast Louisiana and Southeast Arkansas.

As a nonprofit organization, the Ouachita River Valley Association has worked with private enterprise and governments at the Federal, State, and local levels for more than 100 years to encourage investments in projects that are economically sound, socially justified and enhance the general welfare of the people in the Ouachita River basin in Arkansas, Louisiana, and the Nation.

Mr. Chairman, we are grateful for the $13.9 million appropriated in fiscal year 2006 that is permitting significant lock maintenance to be performed for the first time in several years. This work is crucial since all project benefits depend upon the adequacy of the four small locks and dams (84 feet by 600 feet) that have been in place for up to 30 years without adequate maintenance.

The lack of investment in routine maintenance on Ouachita-Black Navigation Project is symptomatic of infrastructure problems throughout the country as was tragically demonstrated during the hurricanes of 2005 which passed on both sides of the Ouachita Basin.

We submit our funding request in three major categories for your consideration. The first and foremost need is that of Operations and Maintenance, General (O&M) funding; second is the need for funding for stabilization of eroding banks that are endangering existing public and private infrastructure; and the third is funding for a study to identify and document the contributions of this waterway to the Nation and the region it serves in Louisiana and Arkansas.

OPERATION AND MAINTENANCE, GENERAL

Historical funding shortfalls for Operations and Maintenance (O&M) are seriously threatening the reliability and dependability of the Ouachita-Black Navigation System. The waterway is an important industrial/agricultural economic generator, vital transportation artery, irreplaceable source for municipal, industrial and agricultural water supplies, a vast recreational asset and natural resource preservation project serving this region and the Nation. These many benefits depend upon safe and reliable operation of four locks and dams and periodic channel maintenance work. Programmed maintenance has been demonstrated to be and is intuitively more economical than breakdown maintenance. Economic losses from service failures brought about by long-term system closures are magnified by unscheduled and more costly "break down" repairs.

An ominous concern specific to the Ouachita-Black System is the inability to dewater the locks to inspect critical lock components and to repair them in a timely manner without long and costly outages. Absent the stoplog slots, a failure of the lock miter gates and other underwater components as a result of deterioration or a marine accident will require months or years to repair as compared to weeks with a working stoplog system. Jonesville Lock was modified with stoplog slots in fiscal year 2004 to provide this capability. However, funding provided in fiscal year 2005 was insufficient to continue this work at the three upstream structures. Work is

continuing this year at Columbia Lock and Dam and with the requested funding for fiscal year 2007 work can continue upstream to Felsenthal Lock and Dam. We strongly urge and recommend that the highest priority be given to continuation of the stoplog slot installation program followed closely with inspection and repair of the critical components that have not been maintained for 30 years.

—Request is made for $14.0 million for routine operations, continuation of the stoplog slot modification program, repair of critical components, initiation of preventive maintenance work, and channel maintenance dredging. This amount is well below the $17.25 million identified as the capability of the Corps of Engineers to perform in fiscal year 2007.

CONSTRUCTION GENERAL, BANK STABILIZATION

The Ouachita River continues to erode the most vulnerable banks with annually rising and falling river stages. The rate and degree of this attack has increased and is now endangering critical public infrastructure such as levees and State highways. Levees have been "set back" at several locations in the past year and bank caving is occurring on the shoulders of Louisiana State Highways 8 and 124. The most severe threat from this erosion is to the levees protecting the cities of Columbia and Monroe. Studies conducted by the Tensas Basin Levee District indicate damages from a failed levee at flood stage would result in damages up to $2 billion with extensive residential and business flooding, and rupture of transportation features such as the municipal airport and Interstate Highway 20.

Protection of infrastructure such as levees, roads and bridges, ports, as well as historical sites is best and most economically provided by judicious hardening or stabilizing the banks of the river. A Corps of Engineers Status Report identified numerous caving sites the length of the river to Remmel Dam and prioritized them for protection. In absence of project authorization, appropriation action is requested. Prevention of damages is more economical than repair and replacement.

—Request is made for $5.0 million for bank protection at the highest priority sites. Proposed Bill and Report language are attached.

GENERAL INVESTIGATIONS, POST-CONSTRUCTION BENEFIT STUDY

Investment in our Nation's resources should be an integral part of our national defense strategy and receive this level of consideration in the national budget. Water resource infrastructure is the backbone of production in the Nation and our means to competitiveness in the global economy. Development and redevelopment of these resources utilizing Federal funds should be thoroughly evaluated and justified on the basis of sound investments. This requires study and evaluation periodically to ensure the maximum return on the public investment.

Difficulty in providing acceptable evidence of waterway benefits frequently casts unwarranted doubt on the advisability of funding specific water resource projects. Efforts to abandon significant portions of the national waterway infrastructure based on narrowly defined, short-term measures of value or outdated uses based on 30-year-old data will almost always result in unintended consequences. Such is the case with the argument that "low use waterways or tributaries should be abandoned" budget-wise for the main-stem waterways. Analysis of Waterborne Commerce Statistics Center data by Institute for Water Resources and TVA reveals that 68 percent of cargo tonnage and 56 percent of waterway ton-miles are generated on tributary streams. The consequence of this action would be a decrease in benefits of the main-stem waterways while increasing the cost of the Nation's transportation. The ancillary benefits such as water supply, recreation and conservation generated in connection with navigation projects are perhaps even greater than transportation benefits and should be determined in greater detail through basin specific studies. Such a study is needed for the Ouachita-Black Navigation Project and the basin.

—Funds in the amount of $250,000 are requested to conduct a post-construction benefit evaluation of the Ouachita-Black Navigation System to provide a basis for future levels of investments.

SUMMATION

Mr. Chairman we appreciate the opportunity to bring these issues to the attention of the committee and to add our voice to those working to strengthen our Nation through wise investment in our natural resources from which springs our wealth. Investments by the Federal Government in the Ouachita-Black Navigation System have and are continuing to make a significant difference in the lives of the people residing in the valley while contributing to the Nation at-large. For this we are grateful. We urge the Congress through its power of the budget to continue maintaining through very modest investments this important component of the national

waterway infrastructure. Proposed Bill and Report Language are enclosed for bank stabilization work.

BILL LANGUAGE

Ouachita and Black Rivers Bank Stabilization, Arkansas and Louisiana

"*Provided further,* That using the funds appropriated herein, the Secretary of the Army, acting through the Chief of Engineers, is authorized and directed to design and construct bank stabilization measures, at Federal expense with local sponsors providing necessary lands, easements, and rights of way, along the Ouachita and Black Rivers, Arkansas and Louisiana, between mile 0 on the Black River, Louisiana, to mile 460 on the Ouachita River, Arkansas at the outlet of Remmel Dam, such measures to be constructed as the Secretary determines necessary to maintain navigation, for flood damage prevention, for control of erosion and for historic preservation."

REPORT LANGUAGE

Ouachita and Black Rivers Bank Stabilization, Arkansas and Louisiana

"The Committee is aware of the severe bank caving and erosion occurring along the Ouachita and Black Rivers, Arkansas and Louisiana, between mile 0 on the Black River, Louisiana, to mile 460 on the Ouachita River, Arkansas at the outlet of Remmel Dam and has included bill language directing the Corps of Engineers to use funds provided, to design and construct bank stabilization measures, at Federal expense with local sponsors providing necessary lands, easements, and rights of way, along the Ouachita and Black Rivers, Arkansas and Louisiana, as the Secretary determines necessary to maintain navigation, for flood damage prevention, for control of erosion, and for historical preservation."

PREPARED STATEMENT OF THE RED RIVER VALLEY ASSOCIATION

Mr. Chairman and members of the committee, I am Wayne Dowd, and pleased to represent the Red River Valley Association as its President. Our organization was founded in 1925 with the express purpose of uniting the Citizens of Arkansas, Louisiana, Oklahoma and Texas to develop the land and water resources of the Red River Basin, Enclosure 1.

The Resolutions contained herein were adopted by the Association during its 81st Annual Meeting in Bossier City, Louisiana, on February 24, 2006, and represent the combined concerns of the citizens of the Red River Basin area as they pertain to the goals of the Association, Enclosure 2.

The President's budget included $4.733 billion for the civil works programs. Even though it is the largest budget provided by any administration it is $596 million less than what was appropriated in fiscal year 2006, $5.329 billion (11.2 percent reduction). The problem is also how the funds are distributed. A few projects received their full "Corps Capability" to the detriment of many projects that received no funding. The $4.733 billion level does not come close to the real needs of our Nation. A more realistic funding level to meet the requirements for continuing the existing needs of the civil works program is $6.5 billion in fiscal year 2007. The traditional civil works programs remain at the low, unacceptable level as in past years. These projects are the backbone to our Nation's infrastructure for waterways, flood control, water supply and ecosystem restoration. We remind you that civil works projects are a true "jobs program" in that up to 85 percent of project funding is contracted to the private sector, 100 percent of the construction, as well as much of the architect and engineering work. Not only do these projects provide jobs, but provide economic development opportunities for our communities to grow and prosper, creating permanent jobs.

There are several policy changes proposed by the administration that we have concerns with.

Major rehabilitation projects were moved from the CG account to O&M account. When you take out these major rehab projects the O&M proposed budget is actually $53 million less than fiscal year 2006. They have "disguised" an actual reduction in O&M project funding.

They also propose to continue using the Inland Waterway Trust Fund (ITWF) to fund 50 percent of the major rehab projects that were moved to O&M. The IWTF was authorized for CG projects, not O&M. If this is allowed, it will then be easy to recommend that all O&M funding be taken from the IWTF and this can never be allowed to happen.

The proposed reduction in GI from $162 million enacted last year, to $94 million, proposed this year, is of concern. When you stop funding studies you assume the economy will stop growing, since you are preparing less projects for the future. Nobody is a proponent for a weak economy. There is also the danger of the Corps losing their planning expertise.

Another proposal allocates O&M funding by region and eliminates funding by individual project. We do not accept this concept since you will lose ownership and identity of each project; therefore, losing grass root support. If this was done, due to reprogramming constraints, then reprogramming should be addressed. Major reprogramming issues are with CG projects, not with O&M projects.

We want to express our concern for "fully funded" contracts. It is possible that the Corps will have a carryover that exceeds $1 billion. Our fear is that this will be viewed as the Corps unable to execute their budget and be allocated less in following years. Another serious consequence is that it neglects the workload distribution of Corps Districts. Are we prepared to consolidate and close down Districts that do not have a workload to support their current work force?

The Corps of Engineers should not be micromanaged and should have less restrictive reprogramming authority. They need to be able to manage their budget and projects in a way that best serves the needs of the Nation.

In the past we have worked hard to "add" funding to the Energy and Water Bill for the Water projects. We want to bring to your attention that in fiscal year 1998 the Water projects received approximately 20 percent of the total bill. Over the last 8 years the Water portion has steadily decreased to only 16.6 percent of the total bill in fiscal year 2005 and increased slightly to 17.4 percent in fiscal year 2006. The Nation's Energy program is very important, but we believe the Water program is too. We ask that the subcommittee on Energy and Water and the full Appropriations Committee support bringing the Water "share" of the bill back to the 20 percent level it once was.

The inland waterway tributary rivers continue to face scrutiny on what determines a successful waterway. This has an impact on the operations and maintenance funding a waterway receives. Using criteria that only considers tons, actually moved on the waterway, neglects the main benefit that justified the original waterway project, transportation cost savings. Currently there is no criteria used to consider "water compelled rates" (competition with rail). We know that there are industries not using our waterway because rail rates were reduced, to match the waterborne rates, the same year our waterway became operational. If the operation of our waterway were terminated the rail rates would increase. Many industries have experienced great "national" transportation savings without using the waterway, which is why the project was authorized.

The main problem is that there is no "post-project" evaluation for navigation projects. We support the development of such an evaluation and volunteer the J. Bennett Johnston Waterway and our efforts to develop one. Such an evaluation could be made once every 5 years to insure the waterway continues to meet the determined criteria. We also believe any evaluation adopted must have input from and be validated by the administration, Congress and industry. Too much money has been expended to use an evaluation that is unfair and disregards the true benefits realized from these waterway projects.

I would now like to comment on some of our specific requests for the future economic well-being of the citizens residing in the four-State Red River Basin regions.

Navigation.—The J. Bennett Johnston Waterway is living up to the expectations of the benefits projected. We are extremely proud of our public ports, municipalities and State agencies that have created this success. This upward "trend" in usage will continue as new industries commence operations. At the Port of Shreveport-Bossier "Steelscape" will be operational in April 2006 processing steel, eventually employing 250 people and moving 500,000 tons per year on the Waterway. A major power company, CLECO, is investing $1 billion in its Rodemacher Plant near Boyce, Louisiana, on the lower Red River and is expected to move over 3 million tons of Coal and "petroleum coke" by 2009. Groundbreaking is set this year for an Edison-Chouest facility, a shipbuilder of offshore support vessels, at the Port of Shreveport-Bossier. These three projects are a reality and there are many more customers considering using our Waterway.

You are reminded that the Waterway is not complete, 6 percent remains to be constructed, $121 million. We appreciate Congress's appropriation level in fiscal year 2006 of $13 million, however, the President's fiscal year 2007 budget drastically cuts that to $1.5 million, which is unacceptable. There is a capability for $18.5 million of work, but we realistically request $13 million to keep the project moving toward completion.

Now that the J. Bennett Johnston Waterway is reliable year round we must address efficiency. Presently a 9-foot draft is authorized for the J. Bennett Johnston Waterway. All waterways below Cairo, Illinois are authorized at 12-foot, to include the Mississippi River, Atchafalaya River, Arkansas River and Gulf Intracoastal Waterway. A 12-foot channel would allow an additional one-third capacity, per barge, which will greatly increase the efficiency of our Waterway and further reduce transportation rates. This one action would have the greatest, positive impact to reduce rates and increase competition, bringing more industries to use waterborne transportation. We request a 1-year reconnaissance study be funded to evaluate this proposal, at a cost of $100,000. Fact: Approximately 95 percent is already at 12-foot year round.

The feasibility study to continue navigation from Shreveport-Bossier City, Louisiana, into the State of Arkansas will be completed in calendar year 2006. There is great optimism that the study will recommend a favorable project; however, the administration must consider the benefit analysis by modern day criteria, not by 25-year-old standards. Benefit analysis is by administration policy and they can consider benefits that impact society today. This region of SW Arkansas and NE Texas continues to suffer major unemployment and this navigation project, although not the total solution, will help revitalize the economy. We request funding of $400,000 to initiate planning, engineering and design, PED.

Bank Stabilization.—One of the most important, continuing programs, on the Red River is bank stabilization in Arkansas and North Louisiana. We must stop the loss of valuable farmland that erodes down the river and interferes with the navigation channel. In addition to the loss of farmland is the threat to public utilities such as roads, electric power lines and bridges; as well as increased dredging cost in the navigable waterway in Louisiana.

These bank stabilization projects are compatible with subsequent navigation into Arkansas and we urge that they be continued in those locations designated by the Corps of Engineers to be the areas of highest priority. We appreciated the Congressional funding in fiscal year 2006 and request you fund this project at a level of $10 million in fiscal year 2007.

Flood Control.—The recent events in New Orleans have demonstrated what will happen when we ignore our levee systems. We know the Arkansas Red River Levees do not meet Federal standards, which is why we have the authorized project, Red River Below Denison Dam, TX, AR & LA. Now is the time to bring these levees up to standards, before a major flood event, which will occur.

We continue to consider flood control a major objective and request you continue funding the levee rehabilitation projects ongoing in Arkansas. Five of eleven levee sections have been completed and brought to Federal standards. Appropriations of $10 million will construct two more levee sections in Lafayette County, AR.

The levees in Louisiana have been incorporated into the Federal system; however, they do not meet current safety standards. These levees do not have a gravel surface roadway, threatening their integrity during times of flooding. It is essential for personnel to traverse the levees during a flood to inspect them for problems. Without the gravel surface the vehicles will cause rutting, which can create conditions for the levees to fail. A gravel surface will insure inspection personnel can check the levees during the saturated conditions of a flood. Funding has been appropriated in the past and approximately 50 miles of levees in the Natchitoches Levee District will be completed this year. We request $2 million to continue this important project in other Louisiana Parishes.

Water Quality.—Nearly 3,500 tons of natural salts, primarily sodium chloride, enter the upper reaches of the Red River each day, rendering downstream waters unusable for most purposes. The Truscott Brine Lake project, which is located on the South Fork of the Wichita River in King and Knox Counties, Texas became operational in 1987. An independent panel of experts found that the project not only continues to perform beyond design expectations in providing cleaner water, but also has an exceptionally favorable benefit-to-cost ratio.

The Assistant Secretary of the Army (Civil Works), in October 1998, agreed to support a re-evaluation of the Wichita River Basin tributary of the project. The re-evaluation report was completed and the Director of Civil Works signed the Environmental Record of Decision. The plan was found to be economically justified. This year the ASA (CW) directed that construction would not proceed until a local sponsor was found to assume 100 percent of the O&M for the project. We strongly disagree with this position, since the current local sponsor signed a cooperation agreement that did not include responsibility for O&M, no project documents require this and the project truly benefits four States. This makes it unreasonable to place the O&M burden on one local sponsor. Since 1987 the Federal Government has funded over $1.5 million per year for O&M on the existing features of the project. We sup-

port language that directs 100 percent of the O&M and construction responsibility be federally funded. Completion of this project will reclaim Lake Kemp as a usable water source for the City of Wichita Falls, Sheppard AFB and the region.

This project will provide improved water quality throughout the four States of the Red River providing the opportunity to use surface water and reduce dependency on ground water. We request appropriations of $2,500,000 to continue the Wichita River features in Texas.

Over the past year there has been a renewed interest by the Lugart-Altus Irrigation District to evaluate construction of Area VI, of the Chloride Control Project, in Oklahoma. They have obtained the support of many State and Federal legislators, as well as a letter from the Oklahoma Governor in support of a re-evaluation report. We request an appropriation of $1,625,000 to continue with this effort.

Water Supply.—Lake Kemp, just west of Wichita Falls, TX, is a major water supply for the needs of this region. Due to siltation the available storage of water has been impacted. A $750,000 reallocation study is needed to determine water distribution needs and raising the conservation pool. $375,000 is needed in fiscal year 2007. Since $207,000 is required for the base annual O&M of Lake Kemp, a Total O&M of $582,000 is requested for fiscal year 2007.

Operation & Maintenance.—Full O&M capability levels are not only important for our Waterway project but for all our Corps projects and flood control lakes. The backlog of critical maintenance only becomes worse and more expensive with time. We urge you to appropriate funding to address this serious issue at the expressed full Corps capability.

We are sincerely grateful to you for the past support you have provided our projects. We hope that we can count on you again to fund our needs and complete the projects started that will help us diversify our economy and create the jobs so badly needed by our citizens. We have included a summary of our requests for easy reference, Enclosure 2.

Thank you for the opportunity to present this testimony and project details of the Red River Valley Association on behalf of the industries, organizations, municipalities and citizens we represent throughout the four-State Red River Valley region. The Civil Works program directly relates to national security by investing in economic infrastructure. If waterways are closed companies will not relocate to other parts of the country—they will move overseas. If we do not invest now there will be a negative impact on our ability to compete in the world market threatening our national security.

ENCLOSURE 1

RED RIVER VALLEY ASSOCIATION

The Red River Valley Association is a voluntary group of citizens bonded together to advance the economic development and future well-being of the citizens of the four-State Red River Basin area in Arkansas, Louisiana, Oklahoma and Texas.

For the past 81 years, the Association has done notable work in the support and advancement of programs to develop the land and water resources of the Valley to the beneficial use of all the people. To this end, the Red River Valley Association offers its full support and assistance to the various Port Authorities, Chambers of Commerce, Levee and Drainage Districts, Industry, Municipalities and other local governing entities in developing the area along the Red River.

The Resolutions contained herein were adopted by the Association during its 81st Annual Meeting in Bossier City, Louisiana on February 24, 2006, and represent the combined concerns of the citizens of the Red River Basin area as they pertain to the goals of the Association, specifically:

—Economic and Community Development;
—Environmental Restoration;
—Flood Control;
—Bank Stabilization;
—A Clean Water Supply for Municipal, Industrial and Agricultural Uses;
—Hydroelectric Power Generation;
—Recreation; and,
—Navigation.

The Red River Valley Association is aware of the constraints on the Federal budget, and has kept those constraints in mind as these Resolutions were adopted. Therefore, and because of the far-reaching regional and national benefits addressed by the various projects covered in the Resolutions, we urge the members of Congress to review the materials contained herein and give serious consideration to funding the projects at the levels requested.

ENCLOSURE 2

RED RIVER VALLEY ASSOCIATION FISCAL YEAR 2007 APPROPRIATIONS—CIVIL WORKS

[In thousands of dollars]

	Fiscal Year 2006 Approp	RRVA 2007 Request	President 2007 Budget	Local Sponsor Requirements
Studies (GI):				
Continue Navigation into SW Arkansas: Feasibility Study.	150	400	.....	(ARRC)
Red River Waterway, LA—12 foot Channel, Recon Study.	.....	100	.....	N/A
Bossier Parish, LA	75	258	.....	Bossier Levee
Cross Lake, LA Water Supply Supplement	99	252	.....	(Shreveport)
Mangum Lake, OK	.....	59	.....	
Southeast Oklahoma Water Resource Study: Feasibility	40	300	.....	(OWRB)
Washita River Basin, OK, Watershed Rehab: Recon Study.	50	195	.....	(?)
SW Arkansas Ecosystem Restoration: Recon Study	100	400	.....	(L)
Mountain Fork River Watershed, OK & AR, Recon Study	.....	.....	.....	(?)
Red River Above Denison Dam, TX & OK: Recon Study	.....	100	.....	(L)
Red River Waterway, Index, AR to Denison Dam, Recon	.....	.....	.....	(?)
Wichita River Basin Study, TX	.....	100	.....	
Construction General (CG):				
Red River Waterway:				
J. Bennett Johnston Waterway, LA	13,000	18,500	1,500	
Index to Denison Reach, Bendway Weir Demo Project (Note: Need language for full federally funded project).	.....	.....	.....	(?)
Chloride Control Project:				
Wichita River, TX	1,125	2,500	.....	
Area VI, OK	375	1,625	.....	
Red River Below Denison Dam	3,000	10,000	.....	
Levee Rehabilitation, AR	.....	.....	.....	
Bowie County Levee, TX	.....	.....	.....	
Upgrade Levees, LA	.....	.....	.....	
Rehabilitate Levee Structures, LA	.....	.....	.....	
Red River Emergency Bank Protection	3,200	10,000	.....	
Big Cypress Valley Watershed, TX: Section 1135	530	500	.....	
McKinney Bayou, AR, PED	.....	.....	.....	
Little River County/Ogden Levee, AR, PED	.....	200	.....	100 (ASWC)
Millwood, Grassy Lake, AR: Section 1135	100	125	.....	(?)
Operation and Maintenance (O&M):				
J. Bennett Johnston Waterway, LA	11,804	21,000	10,542	
Lake Kemp, TX Reallocation Study	.....	582	.....	
Lake O' the Pines Dam, TX	.....	250	.....	
Mississippi River & Tributaries (MR&T):				
Old River Lock:				
Old River Lock Structure	9,690	10,000	9,747	
Old River Lock Oxbow Dredging	.....	600	.....	

Note.—Local Sponsor Column—Sponsor indicated in ( ); (?) indicates No Sponsor Identified and need one to continue. (L) indicates Sponsor not required now, but need one for feasibility; Blank—No Sponsor required.

PREPARED STATEMENT OF THE CALAVERAS COUNTY WATER DISTRICT

Project	Requests
COSGROVE CREEK FLOOD CONTROL PROJECT (Construction General)	$100,000
NEW HOGAN LAKE REOPERATION STUDY (General Investigations)	200,000

CALAVERAS COUNTY WATER DISTRICT

Calaveras County (County) is located in the central Sierra Nevada foothills about 25 miles east of the Sacramento-San Joaquin Delta (Delta). Ground elevations within the County increase from 200 feet above mean sea level near the northwest part of the County to 8,170 feet near Alpine County. It is a predominately rural county

with a relatively sparse but rapidly developing population and limited agricultural and industrial development. Calaveras County is located within the watersheds of the Mokelumne, Calaveras, and Stanislaus Rivers.

All three of these rivers flow west, running through San Joaquin County into the Delta. Most of the County is underlain by the igneous and metamorphic rocks of the Sierra Nevada. Alluvial deposits of the Central Valley, which overlie the westward plunging Sierra Nevada, are present along an 80-square-mile area located along the western edge of the county and are part of the Eastern San Joaquin Groundwater Basin (ESJCGB).

In the fall of 1946, the Calaveras County Water District (CCWD) was organized under the laws of the State of California as a public agency for the purpose of developing and administering the water resources in Calaveras County. Therefore, CCWD is a California Special District and is governed by the California Constitution and the California Government and Water Codes. CCWD is not a part of, or under the control of, the County of Calaveras. CCWD was formed to preserve and develop water resources and to provide water and wastewater service to the citizens of Calaveras County.

Under State law, CCWD, through its board of directors, has general powers over the use of water within its boundaries. These powers include, but are not limited to: the right of eminent domain, authority to acquire, control, distribute, store, spread, sink, treat, purify, reclaim, process and salvage any water for beneficial use, to provide sewer service, to sell treated or untreated water, to acquire or construct hydroelectric facilities and sell the power and energy produced to public agencies or public utilities engaged in the distribution of power, to contract with the United States, other political subdivisions, public utilities, or other persons, and subject to the California State Constitution, levy taxes and improvements.

COSGROVE CREEK FLOOD CONTROL PROJECT

The Cosgrove Creek Flood Control Project will address flooding that occurs along the lower reaches of the creek, as well as flooding that occurs on Spring Creek. Flooding in these areas impacts over 400 people and 100 structures located in the 100-year floodplain. Within the context of the flood control effort, the project will also address options for the beneficial use of peak flows and address other local concerns such as the need for recreational opportunities in the area.

The Calaveras County Water District respectfully requests $100,000 for this project in fiscal year 2007 from the Corps of Engineers Construction General account.

NEW HOGAN LAKE REOPERATION STUDY

Funding for this project is needed to continue the study effort by the U.S. Army Corps of Engineers to examine other project purposes including water uses efficiency, ecosystem restoration and recreation. The New Hogan Lake Reoperation Study continues the study effort initiated under Section 205 for reoperation of the New Hogan Reservoir and for the Corps to look at other project purposes including water use efficiency, ecosystem restoration and recreation.

The Calaveras County Water District respectfully requests $200,000 from the Corps of Engineers General Investigations Account to continue this study effort.

PREPARED STATEMENT OF THE CITY OF ST. HELENA, CALIFORNIA

Project	Requests
ST. HELENA COMPREHENSIVE FLOOD CONTROL PROJECT (General Investigations)	$450,000
UPPER YORK CREEK DAM REMOVAL AND RESTORATION PROJECT (Section 206 Aquatic Ecosystem Restoration Program)	1,600,000
ST. HELENA NAPA RIVER RESTORATION PROJECT (Section 206 Aquatic Ecosystem Restoration Program)	350,000

CITY OF ST. HELENA

The City of St. Helena is located in the center of the wine growing Napa Valley, 65 miles north of San Francisco. The area was settled in 1834 as part of General Vallejo's land grant. The City of St. Helena was incorporated as a city on March 24, 1876 and reincorporated on May 14, 1889.

The City of St. Helena is a General Law City and operates under the Council-City Manager form of government. St. Helena is a full service city and encompasses an area of 4 square miles. The City Council is the governing body and has the power

to make and enforce all laws and set policy related to municipal affairs. The official population of the City of St. Helena as of January 1, 2003 is 6,041. Because of its size and its rural nature, St. Helena has serious infrastructure, as well as, flood protection and environmental needs that far exceed its financial capabilities.

The city from its inception has served as a rural agricultural center. Over the years, with the growth and development of the wine industry, the city has become an important business and banking center for the wine industry. The city also receives many tourists as a result of the wine industry. While, the main goal of the city is to maintain a small-town atmosphere and to provide quality services to its citizens, this is becoming increasingly difficult. Regulatory, administrative and resource requirements placed on the city through the listing of threatened and endangered species under the Endangered Species Act on the Napa River, as well as significant Clean Water Act requirements require the city with a small population base to face significant financial costs.

The Napa River flows along the east boundary of the City of St. Helena in northern Napa County. The overall Napa River Watershed historically supported a dense riparian forest and significant wetland habitat. Over the last 200 years, approximately 6,500 acres of valley floor wetlands have been filled in and 45,700 acres of overall watershed have been converted to urban and agricultural uses. This degradation of natural habitats has had a significant effect on water quality, vegetation and wildlife, and aquatic resources within the Napa River Watershed.

Surface water quality of the Napa River is dependent upon time of year, runoff from York and Sulphur Creeks, and urban area discharges. During the winter months when stream flow is high, pollutants are diluted; however, sedimentation and turbidity is high as well. During the summer months when stream flow is low, pollutants are concentrated and oxygen levels are low, thereby decreasing water quality. Agricultural runoff adds pesticides, fertilizer residue, and sometimes sediment. Discharges from urban areas can include contaminated stormwater runoff and treated city wastewater. The Napa River has been placed on the Clean Water Act 303(d) list and TMDL Priority Schedule due to unacceptable levels of bacteria, sedimentation, and nutrients. It is against this backdrop that the City of St. Helena faces its biggest challenges.

ST. HELENA COMPREHENSIVE FLOOD CONTROL PROJECT

The project site is on the City of St. Helena in Napa County, California (County), along the Napa River and adjacent areas. Within and adjacent to this reach of the River, the city proposes various flood control components, ranging from widening the floodplain and constructing new floodwalls and levee, to relocating homes. An additional component includes flood protection at the Wastewater Treatment Plant (WWTP) south of the city.

With this project, the City of St. Helena seeks to develop and implement a plan that will reduce damage resulting from Napa River flooding in a manner that is economically feasible, acceptable from a public policy standpoint, and environmentally sensitive. In particular, the city wishes to reduce flooding in a manner that will result in overall improvement to the health of the ecosystem in the project reach.

The project will re-connect the Napa River to its historic floodplain, thereby reducing water surface elevations through the area by several feet, avoiding large flood control structures and canalization, and would provide 100-year flood protection to the area. It will also restore habitat of the natural floodplain terraces, including riparian and aquatic habitat. Within and adjacent to this reach of the River, the city proposes various flood control components, ranging from widening the floodplain and constructing new floodwalls and levee, to relocating homes. The St. Helena Comprehensive Project will also restore native plant and tree communities through re-vegetation efforts.

The City of St. Helena respectfully requests the committee's support for $450,000 under the Corps of Engineers General Investigations Account.

UPPER YORK CREEK DAM REMOVAL AND RESTORATION PROJECT

The Upper York Creek Watershed originates at the western side of the Napa Valley watershed and the creek flows through a narrow canyon before joining the Napa River at a 225-foot elevation.

This project will improve fish passage and ecological stream function for the York Creek, a key Napa River Tributary. The project will open an additional 2 miles of steelhead habitat upstream from the current dam location by removing an earthen dam and accumulated sediment necessary to restore fish passage to provide unimpeded upstream adult and downstream juvenile fish passage.

Revegetation, as part of the project, will restore a self-sustaining native plant community that will help exclude non-native invasive species.

The City of St. Helena respectfully requests the committee's support for $1,600,000 under the Corps of Engineers Section 206 Aquatic Ecosystem Restoration Program to design and initiate construction under a design build contract in fiscal year 2007.

ST. HELENA NAPA RIVER RESTORATION PROJECT

The Napa River and its riparian corridor are considered Critical Habitat for Steelhead and Salmon recovery. The Steelhead is one of six Federally-listed threatened and endangered species within the Napa River and its adjoining tributaries which requires attention. Current conditions are such that natural habitats and geomorphic processes of the Napa River are highly confined with sediment transport and geomorphic work occurring in a limited area of the streambed and channel banks. Napa River's habitat for the steelhead is limited in its ability to provide prime spawning habitat. Limitations include urbanization removing significant amounts of shading and cover vegetation within and adjacent to the river; and a detrimental lack of pool habitat.

In an effort to address these Federal environmental issues, the St. Helena Napa River Restoration Project, a Section 06 Aquatic Ecosystem Restoration Project, was identified in the Napa Valley Watershed Management Feasibility Study of April 2001 as a specific opportunity for restoration.

This project will develop riparian planting regimes to maximize habitat values for species, in particular, steelhead, California Freshwater Shrimp and young salmon.

This project will address the lack of shading and cover vegetation along the river which has impaired the river's ability to serve as a critical habitat for many different species of fish and wildlife. It is necessary to ensure and improve the viability of Federal and State listed species by providing rearing, resident and migratory habitat in the project's 3-mile stream corridor. The project will also work to improve area habitat to benefit the migration of steelhead to high value fisheries habitat in upper watershed channel reaches.

The City of St. Helena respectfully requests $350,000 in fiscal year 2007 funding from the Corps of Engineers Section 206 Aquatic Ecosystem Restoration Program to complete the feasibility study. This study will recommend actions not only for maximizing habitat for species by removing obstacles and hard bank stabilization, but to implement improvements to in-stream habitat such as woody debris, boulders and establishment of pools.

PREPARED STATEMENT OF THE CALIFORNIA STATE COASTAL CONSERVANCY

SUMMARY

The following testimony is in support of the California State Coastal Conservancy's fiscal year 2007 Energy and Water Development Appropriations request. The Conservancy respectfully requests needed funding for the following critical projects: $11.7 million for the Hamilton Bel-Marin Keys Wetland Restoration Project, Army Corps of Engineers, Construction General; $2 million for the South San Francisco Bay Shoreline Study, Army Corps of Engineers, General Investigations; $550,000 for the Napa River Salt Marsh Restoration Project, Army Corps of Engineers, General Investigations; $18 million for the Upper Newport Bay Ecosystem Restoration Project, Army Corps of Engineers, Construction General and $100,000 for the Redwood Creek Restoration Project, Army Corps of Engineers, General Investigations.

CONSERVANCY BACKGROUND

The California Coastal Conservancy, established in 1976, is a State agency that uses entrepreneurial techniques to purchase, protect, restore, and enhance coastal resources, and to provide access to the shore. We work in partnership with local governments, other public agencies, nonprofit organizations, and private landowners.

To date, the Conservancy has undertaken more than 950 projects along the 1,100 mile California coastline and around San Francisco Bay. Through such projects, the Conservancy: protects and improves coastal wetlands, streams, and watersheds; works with local communities to revitalize urban waterfronts; assists local communities in solving complex land-use problems and protects agricultural lands and supports coastal agriculture to list a few of our activities.

Since its establishment in 1976, the Coastal Conservancy has: helped build more than 300 access ways and trails, thus opening more than 80 miles of coastal and

bay lands for public use; assisted in the completion of over 100 urban waterfront projects; joined in partnership endeavors with more than 100 local land trusts and other nonprofit groups, making local community involvement an integral part of the Coastal Conservancy's work and completed projects in every coastal county and all nine San Francisco Bay Area counties. In addition, we currently have over 300 active projects that are benefiting the citizens of California.

HAMILTON BEL-MARIN KEYS WETLAND RESTORATION PROJECT

In fiscal year 2007 the California Coastal Conservancy is seeking $11.7 million, consistent with Corps of Engineers' capability, for the continued construction of this project.

This project is of critical importance as it will provide nearly 700 acres of restored tidal and seasonal wetlands at a former Army base, in Marin County, California and provide much needed habitat for several threatened and endangered species; as well as, shorebirds and waterfowl migrating along the Pacific Flyway. In addition, this project beneficially uses dredged material from the San Francisco Bay which provides for increased navigation and maritime commerce for the Bay Area, a much needed economic stimulus for the region.

The first phase of construction, which started last year, is taking place on the former Army Airfield. Miles of levees are currently under construction, after which the main runway and taxiways will be buried under millions of cubic yards of clean dredged sediment. Subsequently, the easterly levee will be breached allowing tidal waters to once again flood the site. Later in the project, the Corps will work on the adjacent Antenna field and Bel Marin Keys V property (subject to WRDA approval) resulting in a total project area of nearly 2,500 acres. This phased approach will be used to complete the design and construction tasks in conjunction with the availability of land and dredged material.

SOUTH SAN FRANCISCO BAY SHORELINE STUDY

The Conservancy is seeking $2,000,000 in funding in order to continue the Feasibility Study for this project. The study was initiated in fiscal year 2005 and has been ongoing, receiving $600,000 in funds in fiscal year 2006.

This project is of national significance as it will create the largest restored wetland on the west coast of the United States and will provide extensive habitat for federally endangered species and migratory waterfowl. In addition, the project is also critical to the region as it will provide tidal and fluvial flood protection for the South San Francisco Bay Area protecting approximately 42,800 acres, 7,400 homes and businesses, and significant urban infrastructure, to include major highways, hospitals and airport facilities.

In order to continue to advance this important study it is imperative that local interests and the Federal Government work together to ensure a reliable funding stream for the project. In accordance, substantial cost-sharing has already begun among the land management agencies. The U.S. Fish and Wildlife Service contributed $8 million toward the $100 million acquisition of the salt ponds. The State of California provided $72 million and the Hewlett Foundation, Packard Foundation, Moore Foundation, and Goldman Fund provided $20 million. The foundations are providing an additional $15 million for restoration planning and $9 million for land management. The State of California is providing $8 million for planning and $6 million for land management.

NAPA RIVER SALT MARSH

For fiscal year 2007, we are seeking $550,000 in Federal funds in order to complete Preconstruction Engineering and Design (PED) for this project which will allow construction to commence as soon as the project is authorized by Congress. Last year, $125,000 was appropriated to the Corps of Engineers for PED activities.

The funds requested would allow the Corps of Engineers to complete design of the Napa River Salt Marsh Project. Upon authorization of the project in WRDA, the Corps will be able to construct the project. Construction of the project will provide extensive benefits to the region, to include: providing extensive wetland habitat in San Francisco Bay; the beneficial use for recycled water in the North Bay; improve open space and recreational opportunities; and resolve urgent issues associated with deterioration of the site's levee, water control structures, and water quality.

The 10,000 acre Napa River Salt Marsh was purchased by the State of California from Cargill in 1994 and is managed by the California Department of Fish and Game. The State Coastal Conservancy has been the non-Federal sponsor working with the Corps on the Feasibility Study. The Corps' Feasibility Study was completed and the Chief's Report was signed in December of 2004. Preconstruction Engineer-

ing and Design is currently taking place with construction commencing once the project is authorized in WRDA.

UPPER NEWPORT BAY ECOSYSTEM RESTORATION

In fiscal year 2007, we are seeking $18 million in funding to complete construction and avoid cost increases and project delays.

Upper Newport Bay, one of the largest remaining tidal wetlands in Southern California, provides significant habitat for numerous federally endangered species, migratory waterfowl and shorebirds along the Pacific Flyway, and anadromous fish and other aquatic species. To ensure the long-term viability of this diverse salt marsh ecosystem as well as the stability of the region's ecosystem, the Army Corps of Engineers and the County of Orange developed the Upper Newport Bay Ecological Restoration Project, which was authorized in the Water Resources Development Act of 2000.

The project will address the habitat conversion resulting from sedimentation in the upper bay, increase the quantity and quality of wetlands habitat, improve water quality by reducing sediment inflows and algal blooms and preserve both Federal and local navigational channels, which if unaddressed will require costly maintenance dredging.

A construction contract was awarded in September 2005 and construction is underway. The available funds (Federal and non-Federal) will be expended by late summer 2006. The funding request of $18 million for fiscal year 2007 will complete construction of this project and avoid cost increases from re-mobilizing equipment and inflation.

REDWOOD CREEK RESTORATION PROJECT

For fiscal year 2007, we are seeking $100,000 to initiate a reconnaissance study of the flood control project.

The Redwood Creek Federal Flood Control Project was originally completed by the Corps of Engineers in 1968, however since the completion of the project very few resources have been dedicated to its management and maintenance and as a result the project is now in need of overdue maintenance to key infrastructure. Despite this fact, ecological concerns make project restoration to design standards prohibitively expensive and legally infeasible.

The $100,000 in requested funding will facilitate a reconnaissance study of the flood control project in order to allow the Army Corps of Engineers to compile and analyze all prior hydrologic and ecological research done on the project area. In addition, the study will bring together local, State, and Federal stakeholders to understand the best opportunities available for enhancement of the flood control and natural areas in the lower river and estuary of Redwood Creek.

The project will provide numerous local and national benefits. For example, the estuary's proximity to the Redwood National and State Parks provides an excellent opportunity to enhance Federal park resources while improving flood control for the community of Orick while provide substantial rearing habitat for numerous federally endangered species.

PREPARED STATEMENT OF THE METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

On behalf of the Metropolitan Water Reclamation District of Greater Chicago (District), I want to thank the subcommittee for this opportunity to present our priority for fiscal year 2007 and, at the same time, express our appreciation for your support of the District's projects in the years past. The District is the local sponsor for the Corps of Engineers priority projects of the Chicagoland Underflow Plan: the O'Hare, McCook and Thornton Reservoirs. We are requesting the subcommittee's full support for McCook and Thornton Reservoirs, as the O'Hare Reservoir has been completed. Specifically, we request the subcommittee to support the President's fiscal year 2007 budget request of $45,000,000 from the Army Corps of Engineers Construction, General account in the fiscal year 2007 Energy and Water appropriations bill. The following text outlines these projects and the need for the requested funding.

THE CHICAGOLAND UNDERFLOW PLAN

The Chicagoland Underflow Plan (CUP) consists of three reservoirs: the O'Hare, McCook and Thornton Reservoirs. These reservoirs are a part of the Tunnel and Reservoir Plan (TARP). The O' Hare Reservoir Project was fully authorized for con-

struction in the Water Resources Development Act of 1986 (Public Law 99–662) and completed by the Corps in fiscal year 1999. This reservoir is connected to the existing O'Hare segment of the TARP. Adopted in 1972, TARP was the result of a multi-agency effort, which included officials of the State of Illinois, County of Cook, City of Chicago, and the District.

TARP was designed to address the overwhelming water pollution and flooding problems of the Chicagoland combined sewer areas. These problems stem from the fact that the capacity of the area's waterways has been overburdened over the years and has become woefully inadequate in both hydraulic and assimilative capacities. These waterways are no longer able to carry away the combined sewer overflow (CSO) discharges nor are they able to assimilate the pollution associated with these discharges. Severe basement flooding and polluted waterways (including Lake Michigan, which is the source of drinking water for millions of people) is the inevitable result. We point with pride to the fact that TARP was found to be the most cost-effective and socially and environmentally acceptable way for reducing these flooding and water pollution problems. Experience to date has reinforced such findings with respect to economics and efficiency.

The TARP plan calls for the construction of the new "underground rivers" beneath the area's waterways, connected to large CSO storage reservoirs. The "underground rivers" are tunnels up to 35 feet in diameter and 350 feet below the surface. All 109.4 miles of the tunnels have just recently been completed. The tunnels capture the majority of the pollution load by capturing all of the small storms and the first flush of the large storms.

The completed O'Hare CUP Reservoir provides 350 million gallons of storage. This Reservoir has a service area of 11.2 square miles and provides flood relief to 21,535 homes in Arlington Heights, Des Plaines and Mount Prospect. The Thornton and McCook Reservoirs are currently under construction, but until and unless they are completed, significant areas will remain unprotected. Without these reservoirs as outlets, the local drainage has nowhere to go when large storms hit the area.

Since its inception, TARP has not only abated flooding and pollution in the Chicagoland area, but has helped to preserve the integrity of Lake Michigan. In the years prior to TARP, a major storm in the area would cause local sewers and interceptors to surcharge resulting in CSO spills into the Chicagoland waterways and during major storms into Lake Michigan, the source of drinking water for the region. Since these waterways have a limited capacity, major storms have caused them to reach dangerously high levels resulting in massive sewer backups into basements and causing multi-million dollar damage to property.

Since implementation of TARP, 823 billion gallons of CSOs have been captured by TARP, that otherwise would have reached waterways. Area waterways are once again abundant with many species of aquatic life and the riverfront has been reclaimed as a natural resource for recreation and development. Closure of Lake Michigan beaches due to pollution has become a rarity. After the completion of both phases of TARP, 99 percent of the CSO pollution will be eliminated. The elimination of CSOs will reduce the quantity of discretionary dilution water needed to keep the area waterways fresh. This water can be used instead for increasing the drinking water allocation for communities in Cook, Lake, Will and DuPage counties that are now on a waiting list to receive such water. Already, these counties have received millions of gallons of additional Lake Michigan water per day, partially as a result of the reduction in the District's discretionary diversion since 1980. Additional allotments of Lake Michigan water will be made to these communities, as more water becomes available from reduced discretionary diversion.

With new allocations of lake water, many communities that previously did not get lake water are in the process of building, or have already built, water mains to accommodate their new source of drinking water. The new source of drinking water will be a substitute for the poorer quality well water previously used by these communities. Partly due to TARP, it is estimated by IDOT that between 1981 and 2020, 283 million gallons per day of Lake Michigan water would be added to domestic consumption. This translates into approximately 2 million additional people that would be able to enjoy Lake Michigan water. This new source of water supply will not only benefit its immediate receivers but will also result in an economic stimulus to the entire Chicagoland area by providing a reliable source of good quality water supply.

THE MCCOOK AND THORNTON RESERVOIRS

The McCook and Thornton Reservoirs of the Chicagoland Underflow Plan (CUP) were fully authorized for construction in the Water Resources Development Act of 1988 (Public Law 100–676). These CUP reservoirs, as previously discussed, are a part of TARP, a flood protection plan that is designed to reduce basement flooding

due to combined sewer back-ups and inadequate hydraulic capacity of the urban waterways.

These reservoirs will provide annual benefits of $115 million. The total expected annual benefits of these projects are approximately twice as much as their total annual costs. The District, as the local sponsor, has acquired the land necessary for these projects, and will meet its cost sharing obligations under Public Law 99–662.

These projects are a very sound investment with a high rate of return. The remaining benefit/cost ratio for these two reservoirs together is 3.0. They will enhance the quality of life, safety and the peace of mind of the residents of this region. The State of Illinois has endorsed these projects and has urged their implementation. In professional circles, these projects are hailed for their farsightedness, innovation, and benefits.

Based on two successive Presidentially-declared flood disasters in our area in 1986 and again in 1987, and severe flooding in the last several years, we believe the probability of this type of flood emergency occurring before implementation of the critical flood prevention measure is quite high. As the public agency for the greater Chicagoland area responsible for water pollution control, and as our past sponsorship for flood control projects, we have an obligation to protect the health and safety of our citizens. We are asking your support in helping us achieve this necessary and important goal of construction completion.

We have been very pleased that over the years the subcommittee has seen fit to include critical levels of funds for these important projects. We were delighted to see the $27,500,000 in construction funds for the McCook and Thornton Reservoirs included in the Energy and Water Appropriations bill for fiscal year 2006. However, it is important that we receive a total of $45,000,000 in construction funds in fiscal year 2007 to maintain the commitment and finish these projects. This funding is critical in order to construct the McCook Reservoir Stage 1 Grout Curtain, Stage 2 Slurry Wall, and Stage 1 Rock Wall Stabilization Contracts and to continue the engineering design of other McCook and Thornton Reservoir projects. The community has waited long enough for protection and we need these funds now to move the project in construction. We respectfully request your consideration of our request.

SUMMARY

To emphasize the area's plight, I would like to relate a flooding event that occurred when just under 4 inches of rain fell on the greater Chicagoland area. Due to the frozen ground, almost all of the rainfall entered our combined sewers, causing sewerage back-ups throughout the area. When the existing TARP tunnels filled with approximately 1.2 billion gallons of sewage and runoff, the only remaining outlets for the sewers were our waterways. Between 9:00 p.m. and 3:00 a.m., the Chicago and Calumet Rivers rose 6 feet. For the first time since 1981 we had to open the locks at all three of the waterway control points; these include Wilmette, downtown Chicago, and Calumet. Approximately 4.2 billion gallons of combined sewage and stormwater had to be released directly into Lake Michigan.

Given our large regional jurisdiction and the severity and regularity of flooding in our area, the Corps was compelled to develop a plan that would complete the uniqueness of TARP and be large enough to accommodate the area we serve. With a combined sewer area of 375 square miles, consisting of the city of Chicago and 51 contiguous suburbs, there are 1,443,000 structures within our jurisdiction, which are subject to flooding at any given time. The annual damages sustained exceed $150 million. With the TARP CUP Reservoirs in place, these damages could be eliminated. We must consider the safety and peace of mind of the 2 million people who are affected as well as the disaster relief funds that will be saved when these projects are in place. As the public agency in the greater Chicagoland area responsible for water pollution control, and as the regional sponsor for flood control, we have an obligation to protect the health and safety of our citizens. We are asking your support in helping us achieve this necessary and important goal. It is absolutely critical that the Corps' work, which has been proceeding for a number of years, now proceeds on schedule through construction.

Therefore, we urgently request that a total of $45,000,000 in construction funds be made available in the fiscal year 2007 Energy and Water Development Appropriations Act to continue construction of the McCook and Thornton Reservoir Projects.

Again, we thank the subcommittee for its support of this important project over the years, and we thank you in advance for your consideration of our request this year.

PREPARED STATEMENT OF THE NAPA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Project	Requests
NAPA RIVER FLOOD CONTROL PROJECT (Construction, General)	$31,000,000
NAPA RIVER DREDGING PROJECT (Operation and Maintenance, General)	3,172,800

On behalf of the Napa County Flood Control and Water Conservation District (District), I want to thank the subcommittee for this opportunity to present our priorities for fiscal year 2007 and, at the same time, express our appreciation for your support of the District's projects in the years past. The District is the local sponsor for the Corps of Engineers award-winning Napa River Flood Control project and we are requesting the subcommittee's full support of this project to ensure that it stays on schedule. Specifically, we request the subcommittee to support our request of $31,000,000 from the Army Corps of Engineers Construction, General account for the Napa River Flood Control Project. We are also seeking $3,172,800 for the maintenance dredging of the Napa River from the Army Corps of Engineers (Operation and Maintenance, General account). The following text outlines these projects and the need for the requested funding.

NAPA RIVER FLOOD CONTROL PROJECT

Background

In the last 50 years, 19 floods have struck the Valley region, exacting a heavy toll in loss of life and property.

Cleanup and claims processing continues today from the most recent disaster, a massive flood that began in the overnight hours of December 30, 2005. This most recent event is estimated to have caused some $70 million in damage within the City of Napa—with the vast majority of that damage in areas that will be protected by the project that is currently under construction.

The flood in 1986 killed three people and caused more than $100 million in damage in 1986 dollars. Damages throughout Napa County totaled about $85 million from the January and March 1995 floods. The floods resulted in 27 businesses and 843 residences damaged countrywide. Almost all of the damages from the 1986, 1995, and 1997 floods were within the project area.

Congress had authorized a flood control project in 1965, but due to expense, lack of public consensus on the design and concern about environment impacts, a project had never been realized. In mid-1995, Federal and State resource agencies reviewed the plan and gave notice to the Corps that this plan had significant regulatory hurdles to face.

The project is located in the city and county of Napa, California. The population in the city of Napa, approximately, 67,000 in 1994, is expected to exceed 77,000 this year. Excluding public facilities, the present value of damageable property within the project flood plain is well over $500 million. The Napa River Basin, comprising 426 square miles, ranging from tidal marshes to mountainous terrain, is subject to severe winter storms and frequent flooding. In the lower reaches of the river, flood conditions are aggravated by local runoff. Floods in the Napa area have occurred in 1955, 1958, 1963, 1965, 1986 (flood of record), 1995, 1997 and 2005. In 1998, the river rose just above flood stage on three occasions, but subsided before major property damage occurred. In December of 2002, flooding occurred from the Napa Creek at the transition to the Napa River, resulting in damage to numerous residents and several businesses.

Approved Plan—Project Overview

In an effort to identify a meaningful and successful plan, a new approach emerged that looked at flood control from a broader, more comprehensive perspective. Citizens for Napa River Flood Management was formed, bringing together a diverse group of local engineers, architects, aquatic ecologists, business and agricultural leasers, environmentalists, government officials, homeowners and renters and numerous community organizations.

Through a series of public meetings and intensive debate over every aspect of Napa's flooding problems, the Citizens for Napa River Flood Management crafted a flood management plan offering a range of benefits for the entire Napa region. The Corps of Engineers served as a partner and a resource for the group, helping to evaluate their approach to flood management. The final plan produced by the Citizens for Napa River Flood Management was successfully evaluated through the research, experience and state-of-the-art simulation tools developed by the Corps

and numerous international experts in the field of hydrology and other related disciplines. The success of this collaboration serves as a model for the Nation.

Acknowledging the river's natural state, the project utilizes a set of living river strategies that minimize the disruption and alteration of the river habitat, and maximizes the opportunities for environmental restoration and enhancement throughout the watershed.

The Corps has developed the revised plan, which provides 100-year protection, with the assistance of the community and its consultants into the Supplemental General Design Memorandum (SGDM) and its accompanying draft Environmental Impact Statement/Environmental Impact Report (SEIS/EIR). Construction of the project began 2 years ago. The coalition plan now memorialized in the Corps final documents includes the following engineered components: lowering of old dikes, marsh plain and flood plain terraces, oxbow dry bypass, Napa Creek flood plain terrace, upstream and downstream dry culverts along Napa Creek, new dikes, levees and flood walls, bank stabilization, pump stations and detention facilities, and bridge replacements. The benefits of the plan include reducing or elimination of loss of life, property damage, cleanup costs, community disruption due to unemployment and lost business revenue, and the need for flood insurance. In fact, the project has created an economic renaissance in Napa with new investment, schools and housing coming into a livable community on a living river. As a key feature, the plan will improve water quality, create urban wetlands and enhance wildlife habitats.

The plan will protect over 7,000 people and over 3,000 residential/commercial units from the 100-year flood event on the Napa River and its main tributary, the Napa Creek, and the project has a positive benefit-to-cost ratio under the Corps calculation. One billion dollars in damages will be saved over the useful life of the project. The Napa County Flood Control District is meeting its local cost-sharing responsibilities for the project. A countywide sales tax, along with a number of other funding options, was approved 4 years ago by a two-thirds majority of the county's voters for the local share. Napa is California's highest repetitive loss community. This plan is demonstrative of the disaster-resistant community initiative, as well, as the sustainable development initiatives of FEMA and EPA.

NAPA RIVER DREDGING PROJECT

The Napa River navigation project was authorized by the Rivers and Harbors Acts of 1888, 1935, and 1946.

The Napa River is a shallow draft navigation channel which serves light commercial and recreational traffic. The project is normally dredged by the Corps of Engineers on a 6-year cycle, with the most recent dredging being completed in 1998. This dredging is 2 years overdue and is causing not only impediment to commercial activity but posing major obstacles for construction of the project from the river. Maintenance dredging is required to restore depths required for existing traffic and in anticipation of the additional boat traffic resulting from replacement of Maxwell Bridge. The Napa County Flood Control and Water Conservation District is responsible for providing a suitable disposal site for the dredged material.

PREPARED STATEMENT OF THE CITY OF ARLINGTON, TEXAS

Mr. Chairman and members of the subcommittee, on behalf of the City of Arlington, Texas, I am pleased to submit this statement for the record in support of our request for funding in the amount of $7.8 million in the fiscal year 2007 Appropriation Bill for Energy and Water Development to support the city's continued efforts to reduce flood damage, improve public safety, reduce erosion and sedimentation, and enhance wildlife habitat and passive recreation within the Johnson Creek corridor through Arlington, Texas.

PROJECT EXECUTIVE SUMMARY

Johnson Creek, a tributary of the Trinity River, has been the topic of extensive study by the Corps of Engineers (Corps) and the City of Arlington, Texas (city) since the early 1980's due to a history of flooding, extensive erosion and sedimentation, recreational challenges and opportunities, and important wildlife habitat.

In 1990, the Corps proposed to address flooding by planning and allocating funds to channelize and line with concrete substantial stretches of Johnson Creek. The city rejected this plan on the grounds that it provided flood relief at the expense of recreational opportunities, wildlife habitat and economic development. The city adopted in 1997 a more holistic alternative called the Johnson Creek Corridor Plan that received wide community support but was not fundable. In 1999, the Corps pre-

pared an Interim Feasibility Report and Integrated Environmental Assessment for Johnson Creek in Arlington. The document recommended a National Economic Development (NED) Plan for flood damage reduction that also addressed the city's desires for enhanced wildlife habitat and recreation in the Johnson Creek corridor. In 2000, the city adopted the Corps' 1999 plan to purchase homes within the floodplain of Johnson Creek, create linear parks with trails, and acquire and restore open space for wildlife habitat and recreation.

In 2004, subsequent to the city's contract with the Corps, the city entered into a partnership with the Dallas Cowboys to build a new football stadium adjacent to the Texas Rangers' venue and land purchased and restored as part of the 1999 plan. In 2005, the Corps' 1999 plan was amended to remove approximately 90 acres of city-owned land north of Union Pacific Railroad tracks.

During ecological investigations associated with design and master plan development of the football stadium, a number of critical issues arose that the 1999 plan (as amended in 2005) only partially addressed. The city realized that a holistic, watershed approach, in conjunction with maximizing the use of on-site best management practices (BMPs), would be required to truly address flooding, water quality, and wildlife habitat/recreation issues at Johnson Creek. The challenge was that deviations from 1999 plan, which largely has been implemented, require explicit authorization from Congress.

In March 2006, the city prepared a watershed conservation plan entitled Johnson Creek: A Vision of Conservation that modifies the 1999/2005 authorized plan. The modified plan allows the city to: (1) implement and modify, if necessary, unfinished components of the 1999/2005 plan; (2) design and construct new bank stabilization, flood control, recreation, and habitat restoration projects on public lands and easements along Johnson Creek; (3) acquire and/or receive reimbursement for an additional 90 acres of environmental lands within Trinity River and/or Rush/Village Creek floodplain; and (4) obtain reimbursement for new acquisitions, if desired, and for the use of city parks for funded Federal projects.

Total project cost to implement the modified plan is estimated at $79,997,666, including contingency. This includes $30,000,000 in sunk costs for completed Johnson Creek projects.

PROJECT DESCRIPTION

The modified plan is divided into a minimum of two phases as summarized below:

Phase 1 includes property between the Union Pacific railroad tracks between Division Street and Abram Street to the northerly Rangers' Pond. Phase 1 was selected for a variety of reasons as follow: (1) There is adequate open space for regional flood control; (2) the riparian corridor has high potential for restoration to improve wildlife habitat, water quality, and recreational opportunities; (3) the property is owned by the city; (4) a significant portion of existing environmental stresses, particularly erosion and sedimentation, occur within this area; (4) the city has identified this area as an entertainment district; and (5) this area includes the future Dallas Cowboys stadium, the existing Texas Rangers stadium, and a future Arlington, Texas town center. These developers have all agreed to provide matching money for the city to improve the green space within this corridor for environmental benefits listed above. Phase 1 work will provide the catalyst and inspiration for future work throughout the remainder of the watershed.

Phase 1 work is all new work and includes constructing a major flood control detention basin between the Union Pacific railroad tracks and Division Street; constructing a detention/sedimentation basin just west of the Stone Gate Mobile Park; restoring the south Rangers' pond to a stream; bank stabilization and creek restoration; modifying the north Rangers' ponds to maximize detention; installing two pedestrian bridges across Johnson Creek; providing trails and other passive recreational amenities; and enhancing remaining green space for wildlife habitat.

Phase 2 includes the Johnson Creek corridor between Union Pacific railroad tracks and Vandergriff Park, and 90 acres of environmental land within Trinity River and/or Rush/Village Creek floodplain. Within the Johnson Creek corridor, Phase 2 work will occur within three main areas. At Vandergriff and Meadowbrook Parks, proposed activities include creating a detention/sedimentation basin; restoring eroded creek banks and creek restoration; enhancing passive recreational opportunities using trails and other amenities; and enhancing wildlife habitat. The third area includes the restoration of two tributaries of Johnson Creek on either side of the main stem, between Sanford Street and Randol Mill Road. Possible acquisition of three homes between Collins Street and Park Row Avenue may also occur as part of Phase 2.

The city has long recognized that the ecological health of Johnson Creek and its contributing watershed are inextricably tied to the quality of life of its residents. In this light, the city hopes to develop a stronger link between its residents and its natural surroundings by restoring the creek, and, in doing so, revitalizing the community. Immediate local benefits include flood damage protection, habitat restoration, improved water quality and public health, increased access to Johnson Creek for passive recreation, elevated community pride, and economic redevelopment. The project complements larger, regional efforts to improve water quality and maximize the function of floodplain communities in the Trinity River watershed. Nearly all local benefits also contribute to statewide water quality, stormwater management, flood control, and environmental planning efforts by the North Central Texas Council of Government, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, Corps of Engineers, Texas Parks and Wildlife, and Texas Commission on Environmental Quality.

FUNDING NEEDS

The modified plan, which includes completed components of the 1999/2005 plan and new Johnson Creek projects as described above, has a total estimated cost of $79,997,666, of which 35 percent will be provided by the city.

For fiscal year 2007, the City of Arlington, Texas is seeking $7.8 million from the U.S. Army Corps of Engineers Programs account through your Energy and Water Development Appropriations Subcommittee.

Thank you for your consideration of our request.

PREPARED STATEMENT OF THE SANTA CLARA VALLEY WATER DISTRICT

UPPER PENITENCIA CREEK FLOOD PROTECTION PROJECT—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support a fiscal year 2007 administration budget request of $319,000 to complete the feasibility study for the Upper Penitencia Creek Flood Protection Project.

STATEMENT OF SUPPORT

Background.—The Upper Penitencia Creek Watershed is located in northeast Santa Clara County, California, near the southern end of the San Francisco Bay. In the last 2 decades, the creek has flooded in 1980, 1982, 1983, 1986, 1995, and 1998. The January 1995 flood damaged a commercial nursery, a condominium complex, and a business park. The February 1998 flood also damaged many homes, businesses, and surface streets.

The proposed project on Upper Penitencia Creek, from the Coyote Creek confluence to Dorel Drive, will protect portions of the cities of San Jose and Milpitas. The floodplain is completely urbanized; undeveloped land is limited to a few scattered agricultural parcels and a corridor along Upper Penitencia Creek. Based on an August 2004 U.S. Army Corps of Engineers' (Corps) Economics Analysis, over 5,000 homes and businesses in the cities of San Jose and Milpitas are located in the 1 percent or 100-year flood area. Flood damages were estimated at $455 million. Benefit-to-cost ratios for the nine project alternatives range from 2:1 to 3.1:1.

Study Synopsis.—Under authority of the Watershed Protection and Flood Prevention Act (Public Law 83–566), the Natural Resources Conservation Service (formerly the Soil Conservation Service) completed an economic feasibility study (watershed plan) for constructing flood damage reduction facilities on Upper Penitencia Creek. Following the 1990 U.S. Department of Agriculture Farm Bill, the Natural Resources Conservation Service watershed plan stalled due to the very high ratio of potential urban development flood damage compared to agricultural damage in the project area.

In January 1993, the Santa Clara Valley Water District (District) requested the Corps proceed with a reconnaissance study in the 1994 fiscal year while the Natural Resources Conservation Service plan was on hold. Funds were appropriated by Congress for fiscal year 1995 and the Corps started the reconnaissance study in October 1994. The reconnaissance report was completed in July 1995, with the recommendation to proceed with the feasibility study phase. The feasibility study, initiated in February 1998, is currently scheduled for completion in 2007.

Advance Construction.—To accelerate project implementation, the District submitted a Section 104 application to the Corps for approval to construct a portion of

the project. The application was approved in December 2000. The advance construction is for a 2,600-foot-long section of bypass channel between Coyote Creek and King Road. However, due to funding constraints at the District and concerns raised by regulatory agencies, the design was stopped and turned over to the Corps to complete.

Fiscal Year 2006 Funding.—$628,000 was appropriated in fiscal year 2006 for the Upper Penitencia Creek Flood Protection Project for project investigation.

Fiscal Year 2006 Funding Recommendation.—It is requested that the congressional committee support the administration's fiscal year 2007 budget request of $319,000 for the Upper Penitencia Creek Flood Protection Project to continue the Feasibility Study.

COYOTE/BERRYESSA CREEK PROJECT, BERRYESSA CREEK PROJECT ELEMENT—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support for a fiscal year 2007 appropriation add-on of $2 million to complete with the General Reevaluation Report and update of environmental documents for the Berryessa Creek Flood Protection Project element of the Coyote/Berryessa Creek Project.

STATEMENT OF SUPPORT

Background.—The Berryessa Creek Watershed is located in northeast Santa Clara County, California, near the southern end of the San Francisco Bay. A major tributary of Coyote Creek, Berryessa Creek drains 22 square miles in the City of Milpitas and a portion of San Jose.

On average, Berryessa Creek floods once every 4 years. The most recent flood in 1998 resulted in significant damage to homes and automobiles. The proposed project on Berryessa Creek, from Calaveras Boulevard to upstream of Old Piedmont Road, will protect portions of the Cities of San Jose and Milpitas. The flood plain is largely urbanized with a mix of residential and commercial development. Based on the U.S. Army Corps of Engineers (Corps) 2005 report, a 1 percent or 100-year flood could potentially result in damages exceeding $179 million. Benefit-to-cost ratios for the six project alternatives being evaluated range from 2:1 to 7.3:1.

Study Synopsis.—In January 1981, the Santa Clara Valley Water District (District) applied for Federal assistance for flood protection projects under Section 205 of the 1948 Flood Control Act. The Water Resources Development Act of 1990 authorized construction on the Berryessa Creek Flood Protection Project as part of a combined Coyote/Berryessa Creek Project to protect portions of the Cities of Milpitas and San Jose.

The Coyote Creek element of the project was completed in 1996. The Berryessa Creek Project element proposed in the Corps' 1987 feasibility report consisted primarily of a trapezoidal concrete lining. This was not acceptable to the local community. The Corps and the District are currently preparing a General Reevaluation Report which involves reformulating a project which is more acceptable to the local community and more environmentally sensitive. Project features will include setback levees and floodwalls to preserve sensitive areas (minimizing the use of concrete), appropriate aquatic and riparian habitat restoration and fish passage, and sediment control structures to limit turbidity and protect water quality. The project will also accommodate the City of Milpitas' adopted trail master plan. Estimated total costs of the General Reevaluation Report work are $5 million, and should be completed in the spring of 2007.

Fiscal Year 2006 Funding.—$375,000 was appropriated in fiscal year 2006 for the Coyote/Berryessa Creek Flood Protection Project to continue the General Reevaluation Report and environmental documents update.

Fiscal Year 2007 Funding Recommendation.—Based on the continuing threat of significant flood damage from Berryessa Creek and the need to continue with the General Reevaluation Report, it is requested that the congressional committee support an appropriation add-on of $2 million for the Berryessa Creek Flood Protection Project element of the Coyote/Berryessa Creek Project.

UPPER GUADALUPE RIVER PROJECT—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support for a fiscal year 2007 appropriation add-on of $8.5 million to complete final design and continue construction for the Upper Guadalupe River Flood Protection Project.

STATEMENT OF SUPPORT

Background.—The Guadalupe River is one of two major waterways flowing through a highly urbanized area of Santa Clara County, California, the heart of Silicon Valley. Historically, the river has flooded the central district and southern areas of San Jose. According to U.S. Army Corps of Engineers (Corps) 1998 feasibility study, severe flooding would result from a 100-year flooding event and potentially cause $280 million in damages.

The probability of a large flood occurring before implementation of flood prevention measures is high. The upper Guadalupe River overflowed in March 1982, January 1983, February 1986, January 1995, March 1995, and February 1998, causing damage to several residences and businesses in the Alma Avenue and Willow Street areas. The 1995 floods in January and March, as well as in February 1998, closed Highway 87 and the parallel light-rail line, a major commute artery.

Project Synopsis.—In 1971, the Santa Clara Valley Water District (District) requested the Corps reactivate an earlier study of Guadalupe River. From 1971 to 1980, the Corps established the economic feasibility and Federal interest in the Guadalupe River only between Interstate 880 and Interstate 280. Following the 1982 and 1983 floods, the District requested that the Corps reopen its study of the upper Guadalupe River upstream of Interstate 280. The Corps completed a reconnaissance study in November 1989, which established an economically justifiable solution for flood protection in this reach. The report recommended proceeding to the feasibility study phase, which began in 1990. In January 1997, the Corps determined that the National Economic Development (NED) Plan would be a 2 percent or 50-year level of flood protection rather than the 1 percent or 100-year level. The Corps feasibility study determined the cost of the locally-preferred 100-year plan is $153 million and the Corps NED 50-year plan is $98 million. The District requested that the costs of providing 50-year and 100-year flood protection be analyzed during the preconstruction engineering design phase. The Corps is now proceeding with the preconstruction engineering design phase and has refined the NED Plan to address the District's comments and Endangered Species Act issues and has reevaluated the locally-preferred plan for full Federal cost-sharing. The findings were submitted to Corps Headquarters for approval in March 2004 in a Limited Reevaluation Report on the Proposed Project Modifications. This report contains an evaluation of the revised NED Plan project and the Locally-preferred Plan project, which costs $165 million with a benefit-to-cost ratio of 1:1.42 and $212 million with a benefit-to-cost ratio of 1:1.24, respectively. The Report was approved by the Corps in October 2005. The report recommended full cost-sharing on the Locally-preferred Plan project. Current efforts are underway to reauthorize the project at its current project cost in the Water Resources Development Act of 2005 currently being considered by Congress.

Fiscal Year 2006 Funding.—$3.5 million was authorized in fiscal year 2006 for the Upper Guadalupe River Project to continue final design and initiate construction.

Fiscal Year 2007 Funding Recommendation.—It is requested that the congressional committee support an appropriation add-on of $8.5 million in fiscal year 2007 to complete final design and continue construction on the Upper Guadalupe River Flood Protection Project.

THOMPSON CREEK RESTORATION PROJECT—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee to support a fiscal year 2007 earmark of $400,000 within the Section 206 Aquatic Ecosystem Restoration Program to continue the Thompson Creek Restoration Project.

STATEMENT OF SUPPORT

Background.—Thompson Creek, a tributary of Coyote Creek, flows through the City of San Jose, California. Historically, the creek was a naturally-meandering stream and a component of the Coyote Creek watershed. The watershed had extensive riparian and oak woodland habitat along numerous tributary stream corridors and upland savanna. Currently, these habitat types are restricted to thin sparse pockets in the Thompson Creek restoration project area.

Significant urban development over the last 20 years has modified the runoff characteristics of the stream resulting in significant degradation of the riparian habitat and stream channel. The existing habitats along Thompson Creek, riparian forest stands, are threatened by a bank destabilization and lowering of the water table. Recent large storm events (1995, 1997, and 1998) and the subsequent wet

years in conjunction with rapid development in the upper watershed have resulted in a succession of high runoff events leading to rapid erosion.

The upstream project limits start at Aborn Road and the downstream project limit is Quimby Road where Thompson Creek has been modified as a flood protection project. The project distance is approximately 1 mile.

Status.—In February 2000, the Santa Clara Valley Water District (District) initiated discussions with U.S. Army Corps of Engineers (Corps) for a study under the Corps' Section 206 Aquatic Ecosystem Restoration Program. Based on the project merits, the Corps completed a Preliminary Restoration Plan (PRP) and subsequent Project Management Plan (PMP). After approval of the PRP the Detailed Project Report (DPR) was initiated. The DPR will provide the information necessary to develop plans and specifications for the construction of the restoration project.

Project Timeline

Request Federal assistance under Sec. 206 Aquatic Ecosystem Restoration Program—Feb 2002;
Complete Preliminary Restoration Plan—Jan 2004;
Initiate Detailed Project Report (Feasibility Study)—Jan 2005;
Final Detailed Project Report to South Pacific Division of Corps—Dec 2007;
Initiate Plans and Specifications—Jan 2008;
Project Cooperation Agreement signed—Nov 2008;
Complete Plans and Specifications—Dec 2008;
Advertise Construction Contract—Jan 2009;
Award Construction Contract—Mar 2009;
Construction Start—Apr 2009;
Complete Physical Construction—Mar 2010.

Fiscal Year 2006 Funding.—No funding was received for the project in the fiscal year 2006.

Fiscal Year 2007 Funding Recommendation.—It is requested that the congressional committee support an earmark of $400,000 within the fiscal year 2007 Section 206 Aquatic Ecosystem Restoration Program.

SOUTH SAN FRANCISCO BAY SHORELINE STUDY—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support for a fiscal year 2007 appropriation add-on of $2 million to continue a Feasibility Study to evaluate integrated flood protection and environmental restoration for the South San Francisco Bay Shoreline.

STATEMENT OF SUPPORT

Background.—Congressional passage of the Water Resources Development Act of 1976, originally authorized the San Francisco Bay Shoreline Study, and Santa Clara Valley Water District (District) was one of the project sponsors. In 1990, the U.S. Army Corps of Engineers (Corps) concluded that levee failure potential was low because the existing non-Federal, non-engineered levees, which were routinely maintained by Leslie Salt Company (subsequently Cargill Salt) to protect their industrial interests, had historically withstood overtopping without failure. As a result, the project was suspended until adequate economic benefits could be demonstrated.

Since the project's suspension in 1990, many changes have occurred in the South Bay. The State and Federal acquisition of approximately 15,000 acres of South Bay salt ponds was completed in early March 2003. The proposed restoration of these ponds to tidal marsh will significantly alter the hydrologic regime and levee maintenance activities, which were assumed to be constant in the Corps' 1990 study. In addition to the proposed restoration project, considerable development has occurred in the project area. Many major corporations are now located within Silicon Valley's Golden Triangle, lying within and adjacent to the tidal flood zone. Damages from a 1 percent high tide are anticipated to far exceed the $34.5 million estimated in 1981, disrupting business operations, infrastructure, and residences. Also, historical land subsidence of up to 6 feet near Alviso, as well as the structural uncertainty of existing salt pond levees, increases the potential for tidal flooding in Santa Clara County.

In July 2002, Congress authorized a review of the Final 1992 Letter Report for the San Francisco Bay Shoreline Study. The final fiscal year 2004 appropriation for the Corps included funding for a new start Reconnaissance Study.

Project Synopsis.—At present, large areas of Santa Clara, Alameda and San Mateo Counties would be impacted by flooding during a 1 percent high tide. The proposed restoration of the South San Francisco Bay salt ponds will result in the largest restored wetland on the West Coast of the United States, and also signifi-

cantly alter the hydrologic regime adjacent to South Bay urban areas. The success of the proposed restoration is therefore dependent upon adequate tidal flood protection, and so this project provides an opportunity for multi-objective watershed planning in partnership with the California Coastal Conservancy, the lead agency on the restoration project. Project objectives include: restoration and enhancement of a diverse array of habitats, especially several special status species; tidal flood protection; and provision of wildlife-oriented public access. A Corps Reconnaissance Study was completed in September 2004 and the Feasibility Study was initiated in September 2005.

Fiscal Year 2006 Funding.—$600,000 was appropriated in fiscal year 2006 to continue the Feasibility Study.

Fiscal Year 2007 Funding Request.—It is requested that the congressional committee support an appropriation add-on of $2 million to continue the Feasibility Study to evaluate integrated flood protection and environmental restoration.

SAN FRANCISQUITO CREEK FLOOD DAMAGE REDUCTION AND ECOSYSTEM RESTORATION PROJECT—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support a fiscal year 2007 appropriation add-on of $450,000 to continue a Feasibility Study of the San Francisquito Creek Watershed.

STATEMENT OF SUPPORT

Background.—The San Francisquito Creek watershed comprises 45 square miles and 70 miles of creek system. The creek mainstem flows through five cities and two counties, from Searsville Lake, belonging to Stanford University, to the San Francisco Bay at the boundary of East Palo Alto and Palo Alto. Here it forms the boundary between Santa Clara and San Mateo counties, California and separates the cities of Palo Alto from East Palo Alto and Menlo Park. The upper watershed tributaries are within the boundaries of Portola Valley and Woodside townships. The creek flows through residential and commercial properties, a biological preserve, and Stanford University campus. It interfaces with regional and State transportation systems by flowing under two freeways and the regional commuter rail system. San Francisquito Creek is one of the last natural continuous riparian corridors on the San Francisco Peninsula and home to one of the last remaining viable steelhead trout runs. The riparian habitat and urban setting offer unique opportunities for a multi-objective flood protection and ecosystem restoration project.

Flooding History.—The creek's mainstem has a flooding frequency of approximately once in 11 years. It is estimated that over $155 million in damages could occur in Santa Clara and San Mateo counties from a 1 percent flood, affecting 4,850 home and businesses. Significant areas of Palo Alto flooded in December 1955, inundating about 1,200 acres of commercial and residential property and about 70 acres of agricultural land. April 1958 storms caused a levee failure downstream of Highway 101, flooding Palo Alto Airport, the city landfill, and the golf course up to 4 feet deep. Overflow in 1982 caused extensive damage to private and public property. The flood of record occurred on February 3, 1998, when overflow from numerous locations caused severe, record consequences with more than $28 million in damages. More than 1,100 homes were flooded in Palo Alto, 500 people were evacuated in East Palo Alto, and the major commute and transportation artery, Highway 101, was closed.

Status.—Active citizenry are anxious to avoid a repeat of February 1998 flood. Numerous watershed-based studies have been conducted by the Corps, the Santa Clara Valley Water District, Stanford University, and the San Mateo County Flood Control District. Grassroots, consensus-based organization, called the San Francisquito Watershed Council, has united stakeholders including local and State agencies, citizens, flood victims, developers, and environmental activists for over 10 years. The San Francisquito Creek Joint Powers Authority was formed in 1999 to coordinate creek activities with five member agencies and two associate members. The Authority Board has agreed to be the local sponsor for a Corps project and received congressional authorization for a Corps reconnaissance study in May 2002. The Reconnaissance Study was completed in March 2005 and the Feasibility Study was initiated in November 2005.

Fiscal Year 2006 Funding.—$225,000 was appropriated to San Francisquito Creek in fiscal year 2006 to initiate a Feasibility Study.

Fiscal Year 2007 Funding Recommendation.—It is requested the congressional committee support an appropriation add-on of $450,000 to continue the Feasibility Study.

LLAGAS CREEK PROJECT—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support for a fiscal year 2007 appropriation add-on of $618,000 for planning, design, and environmental updates for the Llagas Creek Flood Protection Project.

STATEMENT OF SUPPORT

Background.—The Llagas Creek Watershed is located in southern Santa Clara County, California, serving the communities of Gilroy, Morgan Hill and San Martin. Historically, Llagas Creek has flooded in 1937, 1955, 1958, 1962, 1963, 1969, 1982, 1986, 1996, 1997, 1998, and 2002. The 1997, 1998, and 2002 floods damaged many homes, businesses, and a recreational vehicle park located in areas of Morgan Hill and San Martin. These are areas where flood protection is proposed. Overall, the proposed project will protect the floodplain from a 1 percent flood affecting more than 1,100 residential buildings, 500 commercial buildings, and 1,300 acres of agricultural land.

Project Synopsis.—Under authority of the Watershed Protection and Flood Prevention Act (Public Law 83–566), the Natural Resources Conservation Service completed an economic feasibility study in 1982 for constructing flood damage reduction facilities on Llagas Creek. The Natural Resources Conservation Service completed construction of the last segment of the channel for Lower Llagas Creek in 1994, providing protection to the project area in Gilroy. The U.S. Army Corps of Engineers (Corps) is currently updating the 1982 environmental assessment work and the engineering design for the project areas in Morgan Hill and San Martin. The engineering design is being updated to protect and improve creek water quality and to preserve and enhance the creek's habitat, fish, and wildlife while satisfying current environmental and regulatory requirement. Significant issues include the presence of additional endangered species including red-legged frog and steelhead, listing of the area as probable critical habitat for steelhead, and more extensive riparian habitat than were considered in 1982. Project economics are currently being updated as directed by Corps Headquarters to determine continued project economic viability.

Until 1996, the Llagas Creek Project was funded through the traditional Public Law 83–566 Federal project funding agreement with the Natural Resources Conservation Service paying for channel improvements and the District paying local costs including utility relocation, bridge construction, and right of way acquisition. Due to the steady decrease in annual appropriations for the Public Law 83–566 construction program since 1990, the Llagas Creek Project had not received adequate funding from to complete the Public Law 83–566 project. To remedy this situation, the District worked with congressional representatives to transfer the construction authority from the Department of Agriculture to the Corps under the Water Resources Development Act of 1999 (Section 501). Since the transfer of responsibility to the Corps, the District has been working the Corps to complete the project. Efforts are underway to reauthorize the project at its current project cost in the Water Resources Development Act of 2005 currently being considered by Congress.

Fiscal Year 2006 Funding.—$450,000 was appropriated in fiscal year 2006 for the Llagas Creek Flood Protection Project for planning and design.

Fiscal Year 2007 Funding Recommendation.—Based upon the high risk of flood damage from Llagas Creek, it is requested that the congressional committee support an appropriation add-on of $618,000 in fiscal year 2007 for planning, design, and environmental updates for the Llagas Creek Project.

GUADALUPE RIVER PROJECT—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support for a fiscal year 2007 administration budget request of $5 million and an appropriation add-on of $2.5 million, for a total of $7.5 million to continue construction of the final phase of the Guadalupe River Flood Protection Project.

STATEMENT OF SUPPORT

Background.—The Guadalupe River is a major waterway flowing through a highly developed area of San Jose, in Santa Clara County, California. A major flood would

damage homes and businesses in the heart of Silicon Valley. Historically, the river has flooded downtown San Jose and the community of Alviso. According to the U.S. Army Corps of Engineers (Corps) 2000 Final General Reevaluation & Environmental Report for Proposed Project Modifications, estimated damages from a 1 percent flood in the urban center of San Jose are over $576 million. The Guadalupe River overflowed in February 1986, January 1995, and March 1995, damaging homes and businesses in the St. John and Pleasant Street areas of downtown San Jose. In March 1995, heavy rains resulted in breakouts along the river that flooded approximately 300 homes and business.

Project Synopsis.—In 1971, the local community requested that the Corps reactivate its earlier study. Since 1972, substantial technical and financial assistance have been provided by the local community through the Santa Clara Valley Water District in an effort to accelerate the project's completion. To date, more than $85.8 million in local funds have been spent on planning, design, land purchases, and construction in the Corps' project reach.

The Guadalupe River Project received authorization for construction under the Water Resources Development Act of 1986; the General Design Memorandum was completed in 1992, the local cooperative agreement was executed in March 1992, the General Design Memorandum was revised in 1993, construction of the first phase of the project was completed in August 1994, construction of the second phase was completed in August 1996. Project construction was temporarily halted due to environmental concerns.

To achieve a successful, long-term resolution to the issues of flood protection, environmental mitigation, avoidance of environmental effects, and project monitoring and maintenance costs, a multi-agency "Guadalupe Flood Control Project Collaborative" was created in 1997. A key outcome of the collaborative process was the signing of the Dispute Resolution Memorandum in 1998, which modified the project to resolve major mitigation issues and allowed the project to proceed. Energy and Water Development Appropriations Act of 2002 was signed into law on November 12, 2001. This authorized the modified Guadalupe River Project at a total cost of $226.8 million. Subsequent to the authorization, the project cost has been raised to $251 million. Construction of the last phase of flood protection was completed December 2004 and a completion celebration held in January 2005. The remaining construction consists of railroad bridge replacements and mitigation plantings. The overall construction of the project including the river park and the recreation elements is scheduled for completion in 2006.

Fiscal Year 2006 Funding.—$5.6 million was authorized in fiscal year 2006 to continue Guadalupe River Project construction.

Fiscal Year 2007 Funding Recommendation.—It is requested that the congressional committee support an appropriation add-on of $2.5 million, in addition to the $5 million in the administration's fiscal year 2007 budget request, for a total of $7.5 million to continue construction of the final phase of the Guadalupe River Flood Protection Project.

COYOTE CREEK WATERSHED STUDY—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support for a fiscal year 2007 appropriation add-on of $100,000 to initiate a Reconnaissance Study of the Coyote Creek Watershed.

STATEMENT OF SUPPORT

Background.—Coyote Creek drains Santa Clara County's largest watershed, an area of more than 320 square miles encompassing most of the eastern foothills, the City of Milpitas, and portions of the cities of San Jose and Morgan Hill. It flows northward from Anderson Reservoir through more than 40 miles of rural and heavily urbanized areas and empties into south San Francisco Bay.

Prior to construction of Coyote and Anderson Reservoirs, flooding occurred in 1903, 1906, 1909, 1911, 1917, 1922, 1923, 1926, 1927, 1930 and 1931. Since 1950, the operation of the reservoirs has reduced the magnitude of flooding, although flooding is still a threat and did cause damages in 1982, 1983, 1986, 1995, and 1997. Significant areas of older homes in downtown San Jose and some major transportation corridors remain susceptible to extensive flooding. The federally-supported lower Coyote Creek Project (San Francisco Bay to Montague Expressway), which was completed in 1996, protected homes and businesses from storms which generated record runoff in the northern parts of San Jose and Milpitas.

The proposed Reconnaissance Study would evaluate the reaches upstream of the completed Federal flood protection works on lower Coyote Creek.

Objective of Study.—The objectives of the Reconnaissance Study are to investigate flood damages within the Coyote Creek Watershed; to identify potential alternatives for alleviating those damages which also minimize impacts on fishery and wildlife resources, provide opportunities for ecosystem restoration, provide for recreational opportunities; and to determine whether there is a Federal interest to proceed into the Feasibility Study Phase.

Study Authorization.—In May 2002, the House of Representatives Committee on Transportation and Infrastructure passed a resolution directing the Corps to ". . . review the report of the Chief of Engineers on Coyote and Berryessa Creeks . . . and other pertinent reports, to determine whether modifications of the recommendations contained therein are advisable in the interest of flood damage reduction, environmental restoration and protection, water conservation and supply, recreation, and other allied purposes . . .".

Fiscal Year 2006 Administration Budget Request and Funding.—The Coyote Watershed Study was one of only three "new start" studies proposed for funding nationwide in the administration fiscal year 2006 budget request. Congress did not include funding for the study in the final fiscal year 2006 appropriations bill.

Fiscal Year 2007 Funding Recommendation.—It is requested that the congressional committee support an appropriation add-on of $100,000 to initiate a multipurpose Reconnaissance Study within the Coyote Creek Watershed.

PREPARED STATEMENT OF THE CITY OF LOS ANGELES BOARD OF HARBOR COMMISSIONERS AND PORT OF LOS ANGELES

Mr. Chairman and members of the subcommittee, thank you for the opportunity to submit testimony in support of full funding of the Channel Deepening Project at the Port of Los Angeles/Los Angeles Harbor; the largest container seaport in the United States and eighth largest in the world. Our testimony speaks in support of a fiscal year 2007 appropriation of $12 million for the Federal share of continued construction of the Channel Deepening Project. Proposed funding for the Channel Deepening Project was not included in the President's fiscal year 2007 budget because the enabling legislation enacted subsequent to completion of the budget document. The Army Corps of Engineers has acknowledged its capability to fully obligate a $12 million appropriation for the project.

The Port of Los Angeles is America's busiest seaport with record volumes of cargo moving through the 7,500-acre harbor. Its strong performance is attributed to a solid U.S. economy and the recovering Asian economies with a renewed manufacturing demand for American exports. The Port itself is a major reason for the remarkable cargo volumes. Its world-class facilities and infrastructure maximize the "one-stop shopping" concept of cargo transportation and delivery favored by most shipping lines. Ocean carriers can send the majority of their West Coast-bound cargo to Los Angeles with full confidence in the Port's modern cargo terminals and efficient train/truck intermodal network. The Channel Deepening Project is a critical Federal navigation improvement project, and is the underpinning of shipping line confidence in the Port of Los Angeles.

In the fiscal year 2006 Energy and Water Development Appropriations Act, Congress authorized an increase in the total project cost to $222 million from $194 million, representing a Federal share of $72,000,000 and a local share of $150,000,000, in accordance with the Army Corps of Engineers' revision. This revision accounts for credits for in-kind services provided by the Port and other required project modifications, including adjustments to the disposal costs for the dredged material, adjustments for construction contract changes, and project administration costs. The cost-share amounts for the Channel Deepening Project is currently under review, as well as a Supplemental EIS/EIR that will evaluate and determine the best alternative for increased disposal capacity. Upon completion of both reviews, the new cost-sharing amounts and the additional costs for disposal at the recommended site(s) will be established. The need for a Supplemental EIS/EIR has moved project completion to fiscal year 2007.

PORT NAVIGATION DEMANDS

The evolving international shipping industry prompted a collaborative effort by the Port of Los Angeles and the Corps of Engineers to implement the Channel Deepening Project in the early 1980's. With this project, the Port will deepen its main Federal channel and tributary channels by 8 feet, from –45 to –53 feet Mean Lower Low Water (MLLW), to accommodate the industry's shift to larger container vessels.

The first of these deeper-draft ships began calling at the Port of Los Angeles in August of 2004, carrying 8,000 20-foot equivalent units of containers (TEUs) and drafting at −50 feet. Currently, carriers have on order more than 155 of these larger vessels that range in size from 7,500 to 10,000 TEUs. These vessels will be delivered at a steady pace over the next 3 years, which means that ports unable to accommodate the bigger ships could be left out of the surge in trade.

In addition to greater navigability for these larger ships, deepening the Main Channel improves safety and security, shipping efficiencies and provides beneficial use of dredged material to create new land for future terminal development. Dredging for the project began in early 2003 with construction scheduled for completion in 2006. Currently, nearly 45 percent of containerized cargo entering the United States goes/travels through the San Pedro Bay port complex. The Port of Los Angeles, alone, handled a record 7.5 million TEUs in calendar year 2005, representing continued growth for any American seaport.

As we have testified before, cargo throughput for the San Pedro Bay—the Port of Los Angeles in particular—has a tremendous impact on the United States economy. We at the Port of Los Angeles cannot over-emphasize this fact. The ability of the Port to meet the spiraling demands of the steady growth in international trade is dependent upon the speedy construction of sufficiently deep navigation channels to accommodate the new containerships. These new ships provide greater efficiencies in cargo transportation, carrying one-third more cargo than most of the current fleet, and making more product inventory of imported goods available to American consumers at lower prices. In addition, exports from the United States have become more competitive in foreign markets. However, for American seaports to keep up, they must immediately make the necessary infrastructure improvements that will enable them to participate in this rapidly changing global trading arena.

Mr. Chairman, these state-of-the-art container ships represent the new competitive requirements for international container shipping efficiencies in the 21st Century, as evidenced by the increased volume of international commerce. As such, we strongly urge Congress to appropriate the $12 million for fiscal year 2007 that will enable the Corps of Engineers to continue construction of the Channel Deepening Project, on schedule, through the project's anticipated completion in 2008.

ECONOMIC BENEFITS

The Channel Deepening Project is clearly a commercial navigation project of national economic significance and one that will yield exponential economic and environmental returns to the United States annually. The national economic benefits are evidenced by the creation of more than 1 million permanent well-paying jobs across the United States; more than $1 billion in wages and salaries, as well as local, State and Federal sales and income tax revenues deposited into the Federal treasury. As an aside, the 7.5 million TEUs handled by the Port of Los Angeles in 2005 had a commercial value of more than $400 billion in container cargo, with significant tax revenues accruing to the Federal Government. Similarly, according to the U.S. Customs Service, users of the Port pay approximately $12 million a day in Customs Duties. The Los Angeles Customs District leads the Nation in total duties collected for maritime activities, collecting more than $6 billion in 2005 alone. The return on the Federal investment at the Port of Los Angeles is real and quantifiable, and we expect it to continue to surpass the cost-benefit ratio—as determined by the Corps of Engineers' project Feasibility Study—many times over.

In closing, Federal investment in the Channel Deepening Project will ensure that the Port of Los Angeles, the Nation's busiest container seaport, remains at the forefront of the new international trade network well into this century. The Channel Deepening Project marks the second phase of the 2020 Infrastructure Development Plan that began with the Pier 400 Deep-Draft Navigation and Landfill Project. The Port of Los Angeles is moving forward with the 2020 Plan designed to meet the extraordinary infrastructure demands placed on it in the face of the continued high volume of international trade. Mr. Chairman, the Port of Los Angeles respectfully urges your subcommittee to appropriate $12 million in fiscal year 2007 to support the U.S. Army Corps of Engineers' continued construction of the Channel Deepening project on behalf of the Port of Los Angeles.

Thank you, Mr. Chairman, for the opportunity to submit this testimony for continued congressional support of the Channel Deepening Project at the Port of Los Angeles. The Port has long valued the support of your subcommittee and its appreciation of the role of the Port of Los Angeles in contributing to this country's economic strength, and the port industry's importance to the economic vitality of the United States.

PREPARED STATEMENT OF AMERICAN RIVERS

American Rivers, on behalf of more than 500 national, regional and local organizations representing more than 5 million constituents concerned with river conservation,[1] urges the committee to provide $2,399,145,000 for the following programs in the Energy and Water Development Appropriations bill for fiscal year 2007, including programs run by the U.S. Army Corps of Engineers, the Department of Energy and Department of Interior agencies. I request that this testimony be included in the official record.

U.S. ARMY CORPS OF ENGINEERS

Project Modification for Improvement of the Environment.—The Project Modification for Improvement of the Environment program (Section 1135) allows the U.S. Army Corps of Engineers (Corps) to restore river systems degraded by existing Corps projects. Under Section 1135, the Corps can modify existing dams and flood control projects to increase habitat for fish and wildlife, and restore areas affected by Corps projects. Non-Federal interests must provide for 25 percent of project costs, and modifications must not interfere with a project's original purpose. American Rivers urges the committee to appropriate $25 million for the Project Modification for Improvement of the Environment program in fiscal year 2007.

Aquatic Ecosystem Restoration.—Section 206, the Aquatic Ecosystem Restoration program, allows the Corps to undertake small-scale projects to restore aquatic habitat, even in areas not directly harmed by past Corps projects. Projects carried out under this program must improve the quality of the environment, be in the public interest, and be cost-effective. American Rivers urges the committee to appropriate $25 million for the Aquatic Ecosystem Restoration program in fiscal year 2007.

Penobscot River Restoration Project.—The Penobscot River Restoration Project is an unprecedented approach to river restoration that will reconfigure hydropower facilities and maintain energy production while opening up more than 500 miles of habitat to 10 native species of anadromous fish, improve water quality, boost wildlife and create new opportunities in communities along New England's second largest river. The two lowermost Penobscot dams, Veazie and Great Works, will be removed and a state-of-the-art fish bypass will be installed at Howland Dam. American Rivers urges the committee to appropriate $300,000 for a reconnaissance and feasibility study on the Penobscot River Restoration Project for in fiscal year 2007.

Missouri River Fish and Wildlife Recovery Project: IA, NE, KS & MO.—The Missouri River Fish and Wildlife Recovery Project is the primary habitat restoration program for the lower Missouri River between Sioux City and St. Louis. Congress established it in 1986 to primarily help reverse the long-term impact on habitat due to the federally sponsored channelization and stabilization projects of the Pick-Sloan era. Supporting the Missouri River Fish and Wildlife Recovery Project will help reverse the decline of river wildlife by restoring historic chutes, side channels, wetlands, backwaters, and other habitat that fish and wildlife need survive. American Rivers urges the committee to appropriate $82.8 million for the Missouri River Fish and Wildlife Recovery Project in fiscal year 2007.

Upper Mississippi Environmental Management Program.—The Upper Mississippi River Environmental Management Program (EMP), the primary habitat restoration and monitoring program on the Upper Mississippi, has a goal of restoring more than 97,000 acres of habitat; the Army Corps reports that EMP has restored or created 28,000 acres of habitat to date. American Rivers urges the committee to appropriate $33.5 million for the Upper Mississippi River Environmental Management Program in fiscal year 2007.

Lower Mississippi River Resource Assessment.—The Lower Mississippi River Resource Assessment (LMRRA) was authorized by Congress in the Water Resources Development Act of 2000. Conducting the Lower Mississippi River Resource Assessment is the first step in consolidating into one region-wide assessment all information about the current status of aquatic habitat in the 954-mile-long Lower Mississippi River, specific habitat development/enhancement opportunities to restore the river ecosystem, and recreational needs. American Rivers urges the committee to appropriate $1.75 million for the Lower Mississippi River Resource Assessment project in fiscal year 2007.

Flood Hazard Mitigation and Riverine Restoration (Challenge 21).—Challenge 21, a flood damage reduction program authorized in 1999, is designed to help support non-structural flood control solutions. Challenge 21 allows the Corps to relocate vul-

[1] These groups and individuals have endorsed the Citizen's Agenda for Rivers which includes the "River Budget" for fiscal year 2007, a report of national funding priorities for local river conservation. For more information on the Citizen's Agenda for Rivers go to www.healthyrivers.org.

nerable homes and businesses in smaller communities, restore floodplain wetlands, increase opportunities for riverside recreation, and improve quality of life in riverside communities. Challenge 21 also authorizes the Corps to work with other Federal agencies to help local governments reduce flood damages and conserve, restore, and manage riverine and floodplain resources. American Rivers urges the committee to appropriate $50 million for the Flood Hazard Mitigation and Riverine Restoration Program in fiscal year 2007.

Lower Columbia River Ecosystem Restoration, OR & WA.—Coastal estuaries in the Pacific Northwest play a vital role in supporting healthy stocks of wild salmon and steelhead trout and other species and improving the quality of life of countless communities. The Northwest Coastal Estuary Program is designed to restore more than 16,000 acres of critical fish and wildlife habitat, augment existing monitoring efforts, and help citizens protect and manage resources by bringing together local governments, State and Federal agencies, environmental groups, ports, and citizens. American Rivers urges the committee to appropriate $3 million for the Lower Columbia River Ecosystem Restoration project in fiscal year 2007.

The Estuary Restoration Act of 2000.—The Estuary Restoration Act of 2000 created the Estuary Habitat Restoration Council to develop a strategy for coordinating and prioritizing estuary restoration while enhancing estuary monitoring, data sharing, and research capabilities. If fully funded at its authorized level, the Act would restore 1 million acres of estuary habitat by 2010. American Rivers urges the committee to appropriate $27.5 million for the Estuary Restoration Act of 2000 in fiscal year 2007.

Individual River Restoration Projects.—Over the past 100 years, the United States has led the world in dam building for a variety of uses, including hydropower, irrigation, flood control and water storage. While they can provide benefits to society, numerous dams have outlived their intended purpose and no longer make sense. Many are old, unsafe, and represent a threat to their river ecosystems. Several individual dam removal projects will restore natural river functions, restore access to migratory fish habitat, and provide economic benefits to neighboring communities. American Rivers urges the committee to appropriate to the Corps the following for individual river restoration projects in fiscal year 2007: (i) $5 million for the removal of the Matilija Dam on the Ventura River in southern California; (ii) $595,000 for the feasibility study on the removal of Rindge Dam on Malibu Creek, CA; and:

—*Kissimmee River Restoration.*—Upon completion of the Kissimmee River restoration project in 2011, over 40 square miles of river and floodplain ecosystem will be restored, including returning 43 miles of meandering river to its original course and re-creating 27,000 of the 35,000 acres of wetlands that were lost to past flood control efforts. The estimated $494.8 million restoration project is being jointly implemented and equally cost-shared by the South Florida Water Management District and the Army Corps of Engineers. American Rivers urges the committee to appropriate $20 million for the Kissimmee River Restoration in fiscal year 2007.

—*Everglades Ecosystem Restoration Projects.*—The 18,000-square-mile Everglades ecosystem of central and southern Florida is one of the world's most diverse and productive wetlands, but is also one of the Nation's most imperiled natural wetland ecosystems. Since 1900, more than half of the ecosystem has been drained and lost to urban and agricultural development, and the remaining marshes are criss-crossed by 1,400 miles of canals that alter natural water flows: (i) American Rivers urges the committee to appropriate $15 million for the Everglades and South Florida Ecosystem Restoration Program in fiscal year 2007; (ii) American Rivers urges the committee to appropriate $100 million for the Comprehensive Everglades Restoration Program in fiscal year 2007.

DEPARTMENT OF ENERGY PROGRAMS

Federal Energy Regulatory Commission in Hydropower Licensing.—The Federal Energy Regulatory Commission (FERC) is responsible for issuing licenses and permits that govern the operation and construction of non-Federal hydropower dams. Congress authorizes the amount of money FERC may spend in a given year, but that money is collected entirely from licensees through annual fees and not from tax dollars. Thus, an increase in FERC's authorized hydropower budget will be passed onto the dam owners and will not impact taxpayers or the deficit. American Rivers urges the committee to appropriate $57.7 million for FERC hydropower relicensing in fiscal year 2007.

Energy Conservation and Energy Efficiency & Renewable Energy Resources.—Many different types of energy production, including hydropower dams and fossil fuels, affect our rivers. As we advance in energy-efficient technology and the use of

renewable energy sources, we can reduce demand and soften the impacts of energy production on rivers. Congress should take steps to eliminate our dependency on fossil fuels by supporting enhanced appropriations for DOE's energy supply and energy conservation programs. American Rivers urges the committee to appropriate $1.2 billion and $700 million, respectively for DOE Energy Conservation program and the Energy Efficiency & Renewable Energy Resources program in fiscal year 2007.

DEPARTMENT OF INTERIOR—BUREAU OF RECLAMATION

Savage Rapids Dam Removal and Pump Replacement (Rogue River, OR).—The Savage Rapids Dam, built in 1921, is the single largest killer of salmon on the Rogue River, including coho salmon, which are listed as threatened under the Federal Endangered Species Act. Removing Savage Rapids dam will provide an enormous boost to the Rogue River's imperiled salmon and steelhead populations. American Rivers urges the committee to appropriate $13 million Savage Rapids Dam Removal and Pump Replacement in fiscal year 2007.

National Irrigation Water Quality Program (Departmental Irrigation Drainage Program).—The National Irrigation Water Quality Program (NIWQP) was created in 1985 in response to a waterfowl die off caused by polluted irrigation discharges. The program focuses on the effects of irrigation on rivers, lakes, and the wildlife that use them. NIWQIP focuses on irrigation systems that discharge water from Federal lands, addressing the impacts that any chemicals associated with agricultural practices (including DDT, arsenic, selenium, and mercury) may have on fish and wildlife. American Rivers urges the committee to appropriate $3 million for the National Irrigation Water Quality Program in fiscal year 2007.

Yakima River Basin Enhancement Project.—The Yakima River Basin is home to Washington's largest Native American tribe and contains one of the largest Bureau of Reclamation (Bur. Rec.) projects in the west. The various Bur. Rec. projects in the basin have depleted and polluted river flows, and water rights conflicts in this basin are legendary. This program aims to restore the river and make better use of the existing water supplies. American Rivers urges the committee to appropriate $14 million for the Yakima River Enhancement Project in fiscal year 2007.

Deschutes Resources Conservancy.—The Deschutes Resources Conservancy (DRC) is focused on restoring streamflow and improving water quality in the Deschutes Basin of Central Oregon. The DRC acts as a catalyst, bringing together all groups working to restore the Deschutes through its restoration grants program, enterprise programs creating markets for environmental services, and community development work aimed at developing a shared vision for basinwide restoration smoothing the endangered species recovery process. American Rivers urges the committee to appropriate $2 million for the Deschutes Resources Conservancy in fiscal year 2007.

CALIFORNIA-FEDERAL BAY DELTA PROGRAM

The California-Federal Bay Delta Program (CalFed) is a partnership between Federal and California agencies to provide a balanced, collaborative approach to the water resource demands on the San Francisco Bay and San Pablo Bay watersheds. The Ecosystem Restoration and Watershed program within CalFed works to restore and improve wildlife habitat through out the watershed, improve fish passage, integrate flood control and ecosystem restoration, and implement specific watershed restoration projects in conjunction with watershed plans. American Rivers urges the committee to appropriate $15 million from the Bureau of Reclamation and $5 million from the U.S. Army Corps of Engineers for the CalFed Ecosystem Restoration and Watershed Program in fiscal year 2007.

PREPARED STATEMENT OF GRANITE FALLS, MINNESOTA

Chairman Domenici and members of the Appropriations subcommittee, I appreciate the opportunity to submit this testimony on behalf of the City Council and the citizens of Granite Falls, Minnesota. We are requesting $2 million in Federal funds for the development of the Detailed Design Report (DDR) plans and specifications, and the initial construction of critical preventative measures to protect the city from future flooding of the Minnesota River. These funds must be earmarked under Section 205, through the U.S. Army Corps of Engineers flood protection work.

This request is based on the "Supplement to the Locally Preferred Plan for Flood Damage Reduction, January, 2002" prepared on behalf of FEMA, the city, and information from the U.S. Army Corps of Engineers, Section 205 study not yet completed. The project has now been authorized in the Water Resources Development Act of 2005 for $12 million ($8 million Federal funds) in HR 2864, Sec. 3078 as a

Section 205 project, in accordance with the Water Resources Development Act of 1986 (100 Stat. 4184) as may be required.

The geological features of the terrain discourages the construction of diversion channels due to the granite subsurface of the soil. Most of the homes and businesses have been relocated using FEMA, State and local resources. The existing uncertified and inadequate levee system must be improved to provide adequate protection for the communities, critical pumping stations installed, and the Municipal Water Plant adjacent to the Minnesota River will require relocation.

THE CITY OF GRANITE FALLS

The City of Granite Falls is a community of slightly more than 3,000 citizens, is located in West Central Minnesota about 122 miles west of St. Paul.

The Minnesota River runs through the northern and eastern portions of the city, and is directly adjacent to the downtown area. The majority of the city's residential and commercial properties are located on the west bank of the Minnesota River in Yellow Medicine County.

Low-lying residential areas on the north end of the city, structures in the commercial business district along the river, and residences located next to the secondary river channels in the southwest part of the city are especially vulnerable to flooding.

RECENT DISASTERS

While the river represents a valuable resource to the community, it has taken a severe toll on residents and businesses during spring floods. The 1997 floods that devastated much of Western Minnesota and North Dakota did not spare Granite Falls. The Flood drove many from their homes and their downtown businesses, and resulted in millions of dollars in damages. Virtually every downtown business was flooded. More than $850,000 was spent by the city, and another $175,000 by the Corps of Engineers to fight the flood.

Hundreds of volunteers from Granite Falls area and the State prevented further devastation as the Minnesota River reached a peak discharge of 53,000 cubic feet per second, more than 3 million cubic feet of floodwater per minute. The rushing water was within inches of the top of the temporary dike as volunteers continued to stack sand bags. If the water had topped the dike, literally dozens of the workers lives would have been severely endangered. Total costs and damages exceeded $5 million.

In July of 2000, the city was hit by an F–4 tornado. An F–5 tornado is the top of the scale. One person was killed, 14 badly injured, and 325 homes were either totally destroyed or severely damaged. The tornado caused more than $26 million in damages in the community.

The following year, 2001, the city was again hit by another record flood event. Though not as severe as the 1997 flooding, damage was reduced significantly by careful city planning and preparation with Federal and State governmental units. Even so, the costs to fight the flood exceeded $500,000 for the city and the Corps of Engineers, and much of the downtown commercial area was evacuated.

Other significant floods have occurred in 1951, 1952, 1965, 1969, and 1994. While floods have cost the community millions of dollars in extensive property damage and economic hardship, the primary concern is the significant risk to the hundreds of volunteers whose work is required building levees during flood events to protect the homes and business.

The preparation for fighting disaster costs has reached nearly $4 million in the past 4 years. That amounts to thousands of dollars to every property owner in the city. Total flood damages and costs were more than $30 million from 1997 through 2001.

Granite Falls has received financial support from FEMA, the Corps of Engineers, the State of Minnesota, in addition to local funds, to clean up after the disasters and to repair damages. Funds have been received to repair streets, housing rehabilitation and construction, economic development, and special services. All the help has been directed toward restoration after the floods and tornado event, but no funds have been made available to protect the city and its citizens from future flooding.

CORPS OF ENGINEERS SECTION 205 STUDY

Following the 1997 flood, the Corps of Engineers initiated a Section 205 study in May, 1998, to evaluate the extent of the flooding problem in Granite Falls, and to explore possible remedies. The study is essentially complete, but has not been released to date. The major problems of cost and funding level addressed in the 205 study have been resolved in the project authorization in HR 2864.

STUDIES CONDUCTED

The city, through a FEMA project grant under the direction of the Minnesota Department of Natural Resources MN/DNR, conducted a study of the flood problems confronting Granite Falls. The overall objective of the study was to evaluate hazards for the Granite Falls area, and to develop preliminary evaluation and prioritization for those hazards.

The Report states, "Because of the tremendous impacts of flooding on the Granite Falls community, and the relative frequency of flooding events, the report begins with an all hazard evaluation, but then focuses on flood hazards, and presents mitigation options and preliminary costs for implementing those options."

The Report evaluated each area of the community, determined the risk factors, and suggested options available to protect the area against flooding. In the conclusion of the Report, it was recommended the most economical solution to provide the necessary protection was buy out many of the properties and move them to a location outside the flood plain. This work is currently in progress.

The elevation of other areas would have to be raised, pump stations would need to be installed, some levees constructed, and the sanitary lift station and the water plant would need to be relocated. It is estimated the cost of this work would be approximately $12 million.

The Supplement to the Locally Preferred Plan (SLPP) provides a level of flood protection for flood events up to the 500-year event. The 1998 Corps of Engineers 205 study indicates the 500-year level of protection is about the same as the 100-year flood plus 3 feet of freeboard. This level of protection is necessary as the result of a reevaluation by FEMA indicated that the current level of protection for Granite Falls was violated in both the 1997 and the 2001 flood events.

The SLPP identifies seven areas severely impacted by flooding, suggests the remedial action needed, and the cost of such work. Relocation costs are not included in this report. The city believes that with the financial assistance received from FEMA and the State of Minnesota to relocate many of the structures in low-lying areas, the remaining project needs are appropriately addressed under flood protection programs administered by the Corps of Engineers.

The Locally Preferred Plan includes the removal of about 41 structures in the lower areas of the city, including several in the commercial district. FEMA has provided the funds for 25 structure moves, leaving only 15 additional structures to be moved as a part of the project.

APPROPRIATION REQUEST

The city requests $2 million from the committee for the purpose of the development of the Detailed Design Report, preparation of plans and specifications, and the placement of pumps stations at two of three critical locations in the city. These pump stations will provide some immediate flood relief during an emergency, but are also needed permanently as a part of the total project.

Thank you for your consideration of this request. And may I also take this opportunity to express our appreciation to the St. Paul District Office of the Army Corps of Engineers for their help and assistance during the crisis we have experienced in recent years. We will be happy to respond to any questions you may have regarding the needs of the city, and the flood protection project.

PREPARED STATEMENT OF THE CITY OF STILLWATER, MINNESOTA

Chairman Domenici and members of the Energy and Water Development Subcommittee, I thank you for the opportunity to submit this testimony requesting the $2 million needed to begin construction on Stage 3 of the Stillwater, Minnesota flood control project. In 2001, the city experienced its seventeenth flood since 1937, immediately after the Corps completed construction work on Lock and Dam No. 3, 20 miles South of the convergence of the Mississippi River and the St. Croix River. This construction on the Mississippi River raised the water level at Stillwater by 8–10 feet.

The first two stages of the project have been completed, and Congress appropriated $2 million in the fiscal year 2002 appropriations bill to begin construction on the critical Stage 3 of the project. When the Corps did not make the funds available for Stage 3 flood wall construction, Congress enacted Sec. 124 in the Consolidated Appropriations Act of 2004, which states,

"SEC. 124. The Secretary of the Army, acting through the Chief of Engineers, is directed to use previously appropriated funds to proceed with design and initiate construction to complete the Stillwater, Minnesota Levee and flood control project."

The Corps was not able to locate the $2 million during fiscal year 2004, stating the funds had been redirected to another project(s). The city had obtained the necessary property from the Burlington Northern Santa Fe Railroad at a cost of $1 million on which a portion of the floodwall will be constructed. Local funds were used to purchase this property.

In 2005, Minnesota Representatives Jim Oberstar, and Mark Kennedy, and Senators Norm Coleman and Mark Dayton contacted the Corps of Engineers regarding the Corps lack of response to the language in the fiscal year 2004 appropriations bill. These contacts resulted in a meeting in a Stillwater City Hall that included members of Congress and their staff, city officials, Brig. General Robert Crear, Commander of the Mississippi Valley Division, and the leadership from the St. Paul, MN Corps of Engineers District Office.

General Crear promised that the funds would be made available immediately to begin work on the DDR, design, plans and specifications, and the relocation of utilities for Stage 3 flood protection for the city. The Corps has begun such work as promised. While not moving as fast as the city would like, they plan to let bids and begin construction early in 2007. Most of the appropriated funds have been used by the Corps during 2005 and 2006, and additional construction funding will be necessary during fiscal year 2007. The Corps states they are awaiting approval from the House and Senate Appropriation Committees to transfer additional funds back to the Stillwater project.

The $2 million in Federal funds requested this year, plus State and local funds will make substantial headway toward the completion of the project. It is projected that the project construction will require 2 years to complete.

PROJECT DELAY COSTLY TO THE CITY

The delay in the completion of the flood control has proven costly to the city. A number of local projects have been held back, waiting for the completion of the floodwall. The Lowell Park development, which parallels the St. Croix River, and is adjacent to the floodwall location, cannot be completed until the floodwall is constructed. The city received to grants to assist in this effort, one for $250,000, and one for $75,000. Both grants were aborted when the city was unable to move forward on the park improvement grants.

There has also been a delay in the inflow and infiltration (I&I) improvements to the trunk storm sewer line that is located approximately where the floodwall will be constructed. Currently, the amount of I&I flowing into the trunk sewer line that flows to the water treatment plant is costing the city more than $10,000 each month, paying for the treatment of river water. The 7-year delay in the completion of the project has cost the city $840,000.

Other projects delayed include the expansion of Lowell Park to the north of the levee system, delayed construction of a pedestrian pathway connecting north Main Street, Lowell Park, the St. Croix River, and downtown Stillwater. Approximately 1.5 million people visited the park and the river area last year, yet we cannot build permanent bathroom facilities until the floodwall in completed. More than 1,100 new citizens will be moving into apartments and condominiums currently under construction in downtown Stillwater. The Mayor and City Council Members had hoped the newcomers would not be greeted with major construction of the floodwall.

PROJECT OVERVIEW

The project is divided into three stages. Stage 1 included the repair and reconstruction of the existing retaining wall that extends 1,000 feet from Nelson Street on the South to the gazebo on the North end of the levee wall system. Stage 2 consists of the extension of the levee wall about 900 feet from the gazebo North around Mulberry Point.

The completion of Stage 2 was delayed by floods of 1997, costing the city and the Federal Government nearly $500,000. After the waters subsided, it was discovered that the soil beneath the planned levee extension was very unstable, requiring a revision of plans, and the addition of another stage in the construction process.

The floodwaters of the St. Croix River did not recede until August of 1997. The construction area remained under water preventing construction work to proceed as scheduled. Lowell Park, which extends the full length of the levee wall system, several structures, and the emergency roadway which is used to provide emergency medical assistance for those using the recreational St. Croix River, and as a water source for local fire departments, were all either under water or inaccessible.

Phase I, the repair and reconstruction of the original levee wall, was completed in the summer of 1998. Work on Stage 1 was completed in late summer of 1997,

and additional soil borings were taken for Stage 2. The soil was found to be very unstable, and unable to support the levee system designed for Stage 2 of the project.

The construction of Stage 2 required remedial action, and was designated as Stage 2S. A contract was awarded for Phase 2S in November, 1998, and was completed in 1999. Phase 2 was begun in the late Fall of 1999, and the major construction work was completed at the end of the year 2000. The Design Memorandum schedule called for the construction of Stage 3 in fiscal year 2002, and to be completed in fiscal year 2003, according to the Corps schedule.

Stage 3 expands the flood protection system by constructing a berm or a 3-foot floodwall, and driving sheet piling below the surface to reduce seepage and to provide a base for the wall. The floodwall will be constructed about 125 feet inland from the riverbank. Stages 1 and 2 were critical to the protection of the fragile waterfront, and also, to prevent minor flooding on the North end of the riverfront.

Stage 3 is the component that provides the flood protection for the city. The rising elevation of the terrain, the floodwall, and minimal emergency measures are designed to provide the city with up to 100-year flood protection.

The Mayor, City Council Members, and Engineering staff all understand that Stage 3 of the flood control project is essential for the protection of life and property of the citizens, that the Stage 3 flood wall is a critical phase of the project, and that the project must be completed at the earliest possible date. The Corps acknowledged the necessity for all three stages of the project when the Design Memorandum included plans for all three stages.

The U.S. Congress directed the Secretary of the Army acting through the Chief of Engineers to proceed with the design and construction to complete the Stillwater Levee and Flood Control Project under Section 124 of the Omnibus Appropriations Act for fiscal year 2004. The city and the State of Minnesota have allocated matching funds for this work. The State has appropriated half of the non-Federal matching funds needed to complete Stage 3 of the project, as well as for Stages 1 and 2. The city has provided the remainder of the required matching funds, consequently, only the Federal share is missing to complete the project.

THE IMPACT OF LOCK AND DAM NO. 3 ON FLOODS STILLWATER

The Lock and Dam No. 3 was constructed in 1937–38 on the Mississippi River at Red Wing, Minnesota. The Lock and Dam construction raised the level of the St. Croix at Stillwater by 8 to 10 feet. It has made the City of Stillwater vulnerable during periods of high water and flooding of the St. Croix since that time. Records prove that the lock and dam construction, raising the water levels of both the Mississippi and the St. Croix River, has markedly increased the incidence of flooding at Stillwater. The culpability of the Corps is clearly evident.

The Mississippi and the St. Croix Rivers merge about 14 miles south of Stillwater. When constructing the Lock and Dam at Red Wing in 1938, the Federal officials recognized that detaining the flow of the Mississippi would back up the water in the St. Croix at Stillwater. A 1,000-foot levee wall system was constructed at Stillwater by the WPA under the supervision of the Corps to protect the fragile waterfront.

LEGISLATIVE HISTORY

The Stillwater Flood Control and Retaining Wall project first was authorized in section 363 of the Water Resources Development Act (WRDA) of 1992. An allocation of $2.4 million was made in the Energy and Water Development Appropriations Act of 1994.

A committee report described the project in three parts—to repair, extend, and expand the levee wall system on the St. Croix River at Stillwater, Minnesota. "To repair" (Stage 1) the original existing levee wall system constructed in 1936. "To extend" (Stage 2) the original wall by approximately 900 feet to prevent the annual flooding that occurs at that location, and "To expand" (Stage 3) the system by constructing the flood wall approximately 125 feet inland from the levee wall system to protect the downtown and residential section in the flood plain.

In 1995, the Design Memorandum confirmed the cost estimate for the project was much too low, and the project was reauthorized for $11.6 million by Congress in the 1996 WRDA legislation. In 2001, the Corps estimated the Federal cost at $9.86 million, the non-Federal cost at $3.29 million, and the total cost of the project to be $13.15 million.

SUMMARY

The Mayor and Council for the City of Stillwater, Washington County Officials, the Governor and Minnesota State Legislature, and bipartisan support of Minnesota

Representatives and Senators in Congress, all recognize the significant importance of completing this project by constructing the Stage 3 flood wall on the St. Croix River at Stillwater. The Members are committed to accomplishing this work as soon as possible. It is critical to the protection of property, the preservation of our history, the respect of historic Indian sites, and the safety of our citizens and their homes and business.

We respectfully urge the Energy and Water Development Subcommittee for Appropriations to allocate the $2 million needed to begin construction of the Stage 3 flood wall in the fiscal year 2007 Appropriations Bill. If you have questions or would like additional information regarding this project, please call on us.

PREPARED STATEMENT OF THE WESTERN COALITION OF ARID STATES

FISCAL YEAR 2007 CIVIL WORKS PROGRAM OF THE U.S. ARMY CORPS OF ENGINEERS BUDGET

The Western Coalition of Arid States (WESTCAS) is submitting this testimony regarding the President's fiscal year 2007 budget request for the U.S. Army Corps of Engineers.

WESTCAS is a coalition of Western towns and municipalities, water and wastewater agencies, irrigation districts, Native American nations, companies with water and wastewater concerns and professionals in the fields of engineering, the environmental sciences, and natural resources law and policy. WESTCAS was formed in 1992 by Western water and wastewater agencies concerned with the quality and management of water resources in the Arid West. A grass roots organization, WESTCAS is dedicated to encouraging the development of water programs and regulations which assure adequate supplies of high quality water for those living in the arid regions while protecting the environment.

The United States Army Corps of Engineering is the world's largest public engineering, design, and construction management agency. Its mission includes:

—Protecting the country's hundreds of rivers, lakes, wetlands, and thousands of miles of coastal shoreline;
—Environmental restoration and stewardship;
—Maintaining direct control of 609 dams, 257 navigational locks and 75 Hydroelectric facilities which generate 24 percent of the Nation's hydropower;
—Providing engineering expertise and emergency management abilities for homeland security; and
—Building much of the infrastructure the Army and Air Force uses to train, house, and deploy our troops.

The fiscal year 2007 budget for the Civil Works Program of the U.S. Army Corps of Engineers emphasizes three critical Corps activities. First, it funds the construction and completion of water resources projects that will provide a high rate of return on the Nation's investment in the Corps' primary mission areas of commercial navigation, flood and storm damage reduction, and aquatic ecosystem restoration.

Second, it increases funding for the Corps' regulatory program to help protect and preserve the Nation's precious waters and wetlands. Third, it reflects the administration's proactive support for the Corps' critical emergency preparedness and response mission by funding the mission in the regular budget process, and not through emergency transfers or supplemental funding. These goals are all extremely important to the arid southwest and general membership of the Western Coalition of Arid States (WESTCAS).

The fiscal year 2007 budget transmitted to Congress consists of $5.271 billion in Direct Program funding which includes $4.733 billion in discretionary funding and $538 million in mandatory funding for the Civil Works program of the U.S. Army Corps of Engineers. The Civil Works program of the U.S. Army Corps of Engineers will be augmented by additional Reimbursed Program funding in the range of $2 billion to $3 billion.

As shown below, over 80 percent of the Civil Works program of the U.S. Army Corps of Engineers will be appropriated as Operation and Maintenance and General Construction.

Appropriation Accounts	Fiscal Year 2007 (millions)	Percentage of Total
Operation & Maintenance	$2,258	47.7
Construction	1,555	32.9
Flood Control, Mississippi River	278	5.9
Regulatory Program	173	3.7

Appropriation Accounts	Fiscal Year 2007 (millions)	Percentage of Total
General Expenses	164	3.5
Formerly Utilized Remedial Action Program	130	2.7
General Investigations	94	2.0
Flood Control & Coastal Emergencies	81	1.7
Total	4,733	100.0

The following table illustrates that additional funding will be appropriated to Operation & Maintenance and Flood Control and Coastal Emergencies, while reducing the funding appropriation for General Construction. The reduced funding in the Construction appropriation account will result in fewer projects in the Civil Works backlog being completed. This is a significant issue that should be corrected.

Appropriation Accounts	Fiscal Year 2006 (Millions)	Fiscal Year 2007 (Millions)	Percentage of Total Budget Fiscal Year 2007	Percentage Change From Prior Year
Operation & Maintenance	$1,979	$2,258	47.7	14.1
Construction	1,637	1,555	32.9	−5.0
Flood Control, Mississippi River	270	278	5.9	3.0
Regulatory Program	160	173	3.7	8.1
General Expenses	162	164	3.5	1.2
Formerly Utilized Remedial Action Program	140	130	2.7	−7.1
General Investigations	95	94	2.0	−1.1
Flood Control & Coastal Emergencies	70	81	1.7	15.7
Total	4,513	4,733	100.0	4.9

The fiscal year 2007 Civil Works budget is a performance-based budget, which reflects a focus on the projects and activities that provide the highest net economic and environmental returns on the Nation's investment. However, the proposed budget is less than the actual U.S. Army Corps of Engineers budget in fiscal year 2001. One must ask whether our priorities are properly in focus.

The impacts caused by Hurricane Katrina could have been significantly reduced with enhanced flood control projects in place to protect the region. The Association Press has recently reported that the estimates of Hurricane Katrina's staggering toll on the Treasury are highly imprecise, costs are certain to climb to $200 billion in the coming weeks. The final accounting could approach the more than $300 billion spent in 4 years to fight in Afghanistan and Iraq. It would seem prudent to invest in construction of facilities to protect the Nation rather than expend hundreds of billions of dollars after a major natural disaster.

Therefore, a priority should be placed on appropriating funds for construction activities focusing on flood control and shoreline protective measures in the U.S. Army Corps of Engineers budget for fiscal year 2007. The construction projects identified in the proposed budget for flood control enhancements in the arid southwest such as the American River Watershed and Santa Ana Mainstem projects in California, the Alamogordo project in New Mexico, and the Brays Bayou project in Texas all should be funded.

Thank you for considering our request.

DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

LETTER FROM THE WYOMING WATER ASSOCIATION

Cheyenne, WY, March 6, 2006.

The Honorable PETE V. DOMENICI, Chairman,
The Honorable HARRY REID, Ranking Member,
Energy and Water Development Subcommittee, Committee on Appropriations, United States Senate, 127 Dirksen Senate Office Building, Washington, DC 20510.

DEAR CHAIRMAN DOMENICI AND SENATOR REID: On behalf of the members of the Wyoming Water Association, I am writing to request your support for an appropria-

tion in fiscal year 2007 of $4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. Consistent with the requests made by our other Upper Colorado and San Juan Recovery. Programs' partners, the funding designation the Wyoming Water Association seeks is as follows: $3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; $1,090,000 for the San Juan River Basin Recovery Implementation Program and $400,000 for activities to avoid jeopardy. The President's recommended budget for fiscal year 2007 has included this line-item amount.

Founded in 1933, the Wyoming Water Association (WWA) is a Wyoming non-profit corporation and voluntary organization of private citizens, elected officials, and representatives of business, government agencies, industry and water user groups and districts. The Association's objective is to promote the development, conservation, and utilization of the water resources of Wyoming for the benefit of Wyoming people. The WWA provides the only State-wide uniform voice representing all types of water users within the State of Wyoming and encourages citizen participation in decisions relating to multi-purpose water development, management and use.

The Wyoming Water Association is a participant in the Upper Colorado River Endangered Fish Recovery Program. That program, and its sister program within the San Juan River Basin, are ongoing partnerships among the States of Colorado, New Mexico, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act. These recovery programs have become national models for collaboratively working to recover endangered species while addressing water needs to support growing western communities in the Upper Colorado River Basin region of the Intermountain West. Since 1988, these programs have facilitated ESA Section 7 consultation (without litigation) for over 1,000 Federal, tribal, State and privately managed water projects depleting approximately 2.9 million acre-feet of water per year.

The requested fiscal year 2007 appropriation will allow the Upper Colorado River Endangered Fish Program to proceed with construction of additional fish passage structures on the Green and Colorado Rivers to provide access to historic habitat upstream of existing diversion dams. The requested funding for the San Juan River Recovery Program will be used for contracts for construction and cooperative agreements with the State of New Mexico to provide and protect instream flows, fish ladders, flooded bottom land restoration, propagation facilities, stocking efforts, non-native and sportfish management activities. These programs' substantial non-Federal cost-sharing funding demonstrates the strong commitment and effective partnerships embodied in both of these successful programs. The requested Federal appropriations are critically important to these efforts moving forward.

The past support and assistance of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. On behalf of the members of the Wyoming Water Association, I thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

Sincerely yours,

JOHN W. SHIELDS,
Executive Secretary.

PREPARED STATEMENT OF THE COLORADO RIVER WATER CONSERVATION DISTRICT

Chairman Domenici and Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of $4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: $3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; $1,090,000 for the San Juan River Basin Recovery Implementation Program and $400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE SAN JUAN WATER COMMISSION

Chairman Domenici, the San Juan Water Commission is requesting your support for an appropriation in fiscal year 2007 of $4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: $3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; $1,090,000 for the San Juan River Basin Recovery Implementation Program and $400,000 for activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE FOUR CORNERS POWER PLANT

Chairman Domenici & Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of $4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: $3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; $1,090,000 for the San Juan River Basin Recovery Implementation Program and $400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE UPPER GUNNISON RIVER WATER CONSERVANCY DISTRICT

Chairman Domenici and Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of $4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: $3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; $1,090,000 for the San Juan River Basin Recovery Implementation Program and $400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE COLORADO WATER CONGRESS

Chairman Domenici and Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of $4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: $3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; $1,090,000 for the San Juan River Basin Recovery Implementation Program and $400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE PUBLIC SERVICE COMPANY OF NEW MEXICO

Chairman Domenici and Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of $4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: $3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; $1,090,000 for the San Juan River Basin Recovery Implementation Program and $400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE CENTRAL ARIZONA WATER CONSERVATION DISTRICT

The Central Arizona Water Conservation District (CAWCD) is pleased to present written testimony regarding the fiscal year 2007 proposed budget for the Bureau of Reclamation (Reclamation).

CAWCD is a political subdivision of the State of Arizona, governed by an elected 15-member board of directors. CAWCD was created in 1971 for the purpose of contracting with the United States to repay the reimbursable construction costs of the Central Arizona Project (CAP) authorized by the Colorado River Basin Project Act of 1968. CAWCD subsequently assumed the responsibility for operating and maintaining the Project. CAWCD has and continues to meet its repayment responsibility. In addition to a $175 million upfront contribution from CAWCD, Reclamation has been paid $655 million since repayment began in January 1994.

BUREAU OF RECLAMATION

CAWCD generally supports Reclamation's budget request. However, we believe that some of the priorities are misplaced. Reclamation has begun a scoping process to develop new guidelines for managing the Colorado River system and to adopt Lower Basin shortage sharing guidelines. The Seven Basin States sent a letter to the Secretary of the Interior, dated February 3, 2006, that strongly supports Reclamation's process and encourages Reclamation to take several actions to preserve, enhance and more efficiently manage the Colorado River water supply. Reclamation's Lower Colorado River Operations budget request has funds identified to complete the scoping process, but does not have sufficient funds for structures and programs to improve operational efficiency or augment supplies.

We would urge the committee to reorder priorities in this budget to focus meaningfully on important strategies for the Lower Colorado River.

LOWER COLORADO RIVER WATER CONSERVATION

Specifically, we are concerned about the lack of concrete focus on preserving storage capacity in Lake Mead by undertaking activities that would augment water availability and improve system operational efficiency.

Congress is well aware of the huge impacts that a multi-year drought has imposed on this region, and of the significant drawdown of stored water in the river's reservoirs that has resulted from this drought. A significant amount of water has been released over these years from Hoover Dam that could have been retained if effective downstream strategies had been implemented.

The construction of an off stream regulatory storage reservoir near Drop 2 of the All-American Canal has been identified as capable of saving over 60,000 acre-feet per year. The Colorado River Front Work and Levee System budget request only has

funds to complete designs, specifications, and environmental compliance activities. Were Reclamation serious about aggressively pursuing these strategies, its request for these items would be in excess of $40 million, not the $2.5 million requested. In order to ensure that this critical reservoir is constructed, the Seven Basin States have approved a program to make contributed funds available from Southern Nevada Water Authority (SNWA) to construct the reservoir. SNWA is prepared to contribute $84 million over 2 years (the full estimated cost). Reclamation should be prepared with plans, administrative procedures and personnel to accept the money and initiate construction in fiscal year 2007.

YUMA DESALTING PLANT

Reclamation's budget justification concerning the Yuma Desalting Plant (YDP) continues to be disingenuous. Reclamation continues to say that the plant is in "ready reserve" status, but quickly states it would take 4 years and $26 million to have the YDP fully operational. The October 26, 2006, report to Congress and the budget request for a pilot program to pay U.S. water delivery contractors to forebear use of water indicate the Reclamation preference for a forbearance program as opposed to salvaging the saline water by operating the YDP. A long-term program relying primarily on forbearance in the United States is not acceptable to CAWCD or any of the Lower Basin States. Decisions need to be made and resources need to be applied to bring the YDP into actual operation. Every year the YDP remains idle results in the loss of enough water to supply the annual water needs of half a million people. We urge the committee to direct Reclamation to make the Yuma Desalting Plant operational at one-third capacity and initiate regular operations no later than September 30, 2008.

COLORADO RIVER AUGMENTATION

CAWCD would like to call the committee's attention to the provisions of Sections 201, 202 and 203 of Title 1 of the Colorado River Basin Project Act of 1968 (Public Law 90–537). These provisions call for studies and actions to augment the supply of water available for distribution within the Colorado River Basin. These provisions specifically make satisfaction of the obligations of the 1944 Treaty with Mexico a national obligation and anticipate that that obligation will be met through augmentation of the Colorado River supply. The Seven Basin States have initiated a program, led and funded primarily by the Southern Nevada Water Authority, to review previous augmentation studies and evaluate new concepts. We intend to develop recommended augmentation programs to be undertaken by local, State, and Federal organizations. At the very least, Reclamation needs to commit sufficient funds to support these studies in fiscal year 2007. CAWCD suggests that at least $200,000 be committed from Reclamation's overall appropriations for such activities as General Planning, Research and Development, or Water 2025. CAWCD urges the committee to direct Reclamation to take action and provide funding to fulfill the commitment Congress made 37 years ago to augment the water supply in the Colorado River Basin.

CAP INDIAN DISTRIBUTION SYSTEMS

We support Reclamation's request for $18,918,000 in funding for CAP Indian Distribution Systems. A key element of the negotiated settlement embodied in the Arizona Water Settlements Act is continued Indian distribution system funding through 2009.

TUCSON RELIABILITY

We note that Reclamation has reduced its funding request for "Tucson Reliability" to a much lower level of $200,000. We have testified before and we reiterate here that Reclamation is obligated to confer with CAWCD before proceeding with any reliability projects that would increase the CAWCD repayment obligation. That said, we believe the $200,000 requested will be sufficient for Reclamation's planned activities in fiscal year 2007.

LOWER COLORADO RIVER OPERATIONS PROGRAM

In its fiscal year 2007 budget request, Reclamation includes $9,603,000 in its Lower Colorado River Operations Program for the Lower Colorado River Multi-Species Conservation Program (MSCP).

The MSCP is a cost-shared program among Federal and non-Federal interests to develop a long-term plan to conserve endangered species and their habitat along the Lower Colorado River from Lake Mead to Mexico. CAWCD is one of the cost-sharing

partners. Development of this program will provide habitat for threatened and endangered species and, at the same time, allow current water and power operations to continue. CAWCD supports Reclamation's budget request for the Lower Colorado River Operations Program. This funding level is necessary to support the MSCP effort as well as environmental measures necessary to fully implement the interim surplus criteria for the Lower Colorado River. These are critical programs upon which Lower Colorado River water and power users depend.

INCREASED SECURITY COSTS FOR RECLAMATION HYDRO POWER FACILITIES

We continue to oppose the funding of post-9/11 increased security costs for Reclamation facilities through hydropower rates. The increased costs are being incurred for national security reasons, not project maintenance or operation. Details of these costs must be kept secret and cannot be disclosed like other data in Power Marketing Administration rate cases, raising serious due process issues. Other project beneficiaries are not and, in some cases, cannot be charged a fair share of these costs. Congress should make these increased national security costs nonreimbursable.

CONCLUSION

We have worked for over 3 decades with the Congress and all the succeeding administrations to make the Central Arizona Project a reality as envisioned by Congress in the 1968 Act and to ensure its major contribution to the economic welfare of the State of Arizona. Improving the ability of the Lower Colorado River system to conserve and store precious Colorado River water supplies is central to our mission and, we believe, a core directive of the 1968 Act. The lengthy drought on the Colorado River has proven the correctness of that focus and the wisdom of Congress in passing the 1968 Act. It is time to aggressively move forward to accomplish the additional tasks that have been identified. We look forward to working with the Congress, the Bureau of Reclamation and the other Federal agencies and the Basin States to get this work done.

PREPARED STATEMENT OF DENVER WATER

Chairman Domenici and Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of $4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: $3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; $1,090,000 for the San Juan River Basin Recovery Implementation Program and $400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

LETTER FROM THE NORTHERN COLORADO WATER CONSERVANCY DISTRICT

Berthoud, CO, March 7, 2006.

The Honorable PETE V. DOMENICI, Chairman,
The Honorable HARRY REID, Ranking Member,
Energy and Water Development Subcommittee, Committee on Appropriations, United States Senate, 127 Dirksen Senate Office Building, Washington, DC 20510.

DEAR CHAIRMAN DOMENICI AND SENATOR REID: On behalf of the Northern Colorado Water Conservancy District, I am writing to request your support for an appropriation in fiscal year 2007 of $4,594,000 to the U.S. Bureau of Reclamation (Reclamation) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: $3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; $1,090,000 for the San Juan River Basin Recovery Implementation Program; and $400,000 for activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. I thank you for your support and request the subcommittee's assistance for fiscal year 2007 funding to ensure Reclamation's continuing financial participation in these vitally important programs.

Sincerely,

ERIC W. WILKINSON,
General Manager.

PREPARED STATEMENT OF THE PUEBLO BOARD OF WATER WORKS

Chairman Domenici and Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of $4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: $3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; $1,090,000 for the San Juan River Basin Recovery Implementation Program and $400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE TRI-COUNTY WATER CONSERVANCY DISTRICT

Chairman Domenici and Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of $4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: $3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; $1,090,000 for the San Juan River Basin Recovery Implementation Program; and $400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE CENTRAL UTAH WATER CONSERVANCY DISTRICT

Chairman Domenici and Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of $4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: $3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; $1,090,000 for the San Juan River Basin Recovery Implementation Program; and $400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE SOUTHWESTERN WATER CONSERVATION DISTRICT

Chairman Domenici and Senator Reid, the Southwestern Water Conservation District was established by the Colorado General Assembly in 1941 to conserve and protect the water of the San Juan and Dolores Rivers and their tributaries in nine counties in Southwest Colorado. Therefore, we are requesting your support for an appropriation in fiscal year 2007 of $4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designations we are seeking are as follows: $3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; $1,090,000 for the San Juan River Basin Recovery Implementation Program; and $400,000 for activities to avoid jeopardy to the endangered fish.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE STATE OF WYOMING

Chairman Domenici and Senator Reid, I am writing to request your support and assistance in insuring continued funding for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. Wyoming and the other participating States request your support for an appropriation in the President's recommended budget for fiscal year 2007 of $4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: $3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; $1,090,000 for the San Juan River Basin Recovery Implementation Program and $400,000 for activities to avoid jeopardy.

These recovery programs have become national models for collaboratively working to recover endangered species while meeting water use and water development demands in compliance with the Endangered Species Act, State law, and interstate compacts in the Upper Colorado River Basin region of the Intermountain West. Since 1988, these programs have facilitated ESA Section 7 consultation (without litigation) for over 1,000 Federal, tribal, State and privately managed water projects depleting approximately 2.9 million acre-feet of water per year.

The requested fiscal year 2007 appropriation will allow the Upper Colorado River Endangered Fish Program to proceed with construction of additional fish passage structures on the Colorado River to provide access to historic habitat upstream of existing diversion dams, a fish screen on a major diversion on the Green River to avoid entrainment of endangered fish, and construction of the Elkhead Project to provide low flow augmentation water on the Yampa River. The requested funding for the San Juan River Recovery Program will be used for construction of a fish screen and fish passage in critical habitat on the San Juan River.

These activities are funded pursuant to Public Law 106–392, as amended, which authorized the Federal Government to provide cost sharing for these two ongoing recovery programs' remaining capital construction projects. Raising and stocking of the endangered fish produced at program hatchery facilities, restoring floodplain habitat and fish passage, regulating and supplying instream habitat flows, installing fish screens in canal systems and controlling nonnative fish populations are key components of the programs' ongoing capital construction projects. Substantial non-Federal cost-sharing funding exceeding 50 percent for capital construction activities demonstrates the strong commitment and effective partnerships embodied in both of these successful programs.

The requested Federal appropriations are critically important to continuation of these efforts. The past support and assistance of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. Wyoming thanks you for that support and requests the subcommittee's assistance for fiscal year 2007

funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE PERKINS COUNTY RURAL WATER SYSTEM, INC.

Perkins County Rural Water System, Inc. respectfully submits this written testimony to the Appropriations Subcommittee on Energy and Water Development for appropriations of $6.0 million for fiscal year 2007. This project was authorized under Public Law 106–136.

Perkins County Rural Water System, (PCRWS) gained the approval of the Office of Management and Budget and the Bureau of Reclamation to proceed with construction in 2004. We have been appropriated to date $11.71 million. The administration has zeroed out our funding for 2007. To stay on course with our project, it is very important that we get a write-in on the Senate's Appropriations Committee for $6.0 million. Cost share for the System is 75 percent Federal, 10 percent State, and 15 percent local match. The State of South Dakota has legislated to loan PCRWS the local share for 40 years at 3 percent interest to keep costs down to the consumer.

Breakdown for the project for 2007 is as follows:

2007 BUDGET

	Amount
INCOME:	
BUREAU OF RECLAMATION	$6,000,000
STATE OF SOUTH DAKOTA	1,500,000
MISC	350,000
TOTAL	7,850,000
EXPENSE:	
FINISH PIPE FOR 2006	450,000
NORTH DAKOTA STATE WATER COMMISSION	1,320,000
RESERVOIR	800,000
SHADEHILL AREA	1,300,000
PRAIRIE CITY AREA	925,000
BISON RURAL	925,000
BOOSTER PUMP STATION	200,000
ENGINEERING	350,000
CONSTRUCTION MISC	1,580,000
TOTAL	7,850,000

PCRWS will need $6.0 million for each of the next 3 years to complete our project on schedule. This consists of 550 miles of various size pipe ranging from 1.5 inches to 8 inches, one booster pump station capable of moving 800 gallon per minute, a 1.0 million storage tank and telemetry to operate the whole system from one localized location.

The quality of water in northwest South Dakota is the main concern for the health and well being of the people. Although the water typically meets primary standards established by the USEPA, most of the dissolved solids are exceedingly high by the State of South Dakota standards. Water quality and quantity in Perkins County, South Dakota has been a plague for the county over many years. Droughts, both long and short term, are a fact of life for the people in this area. Being able to obtain quality water during these periods and having a back up system for other times would make life a lot easier for those rural areas. Due to the isolation from major water supplies, this may be our only chance to obtain water at an affordable cost.

On behalf of the Board of Directors of PCRWS and the people of Perkins County, South Dakota, thank you for you for allowing us to enter this testimony in subcommittee's report.

PREPARED STATEMENT OF THE GRAND VALLEY WATER USERS' ASSOCIATION

Chairman Domenici and Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of $4,594,000 to the Bureau of Reclamation within

the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: $3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; $1,090,000 for the San Juan River Basin Recovery Implementation Program; and $400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE COLORADO RIVER BASIN SALINITY CONTROL FORUM

Colorado River Basin Salinity Control Forum's Recommendation:

—1. Title II Program (Basinwide Program) Authorized in 1995 (Public Law 104–20)—$17,500,000.

—2. Colorado River Water Quality Improvement Program—Administration Request.

—3. Paradox Valley Unit and Grand Valley Unit—Administration Request.

This testimony is in support of funding for the Title II Colorado River Basin Salinity Control Program. The Congress has designated the Department of the Interior, Bureau of Reclamation (Reclamation), to be the lead agency for salinity control in the Colorado River Basin. This role and the authorized program were refined and confirmed by the Congress when Public Law 104–20 was enacted. A total of $17,500,000 is requested for fiscal year 2007 to implement the needed and authorized program. Failure to appropriate these funds will result in significant economic damage in the United States and Mexico.

In recent years, the President's requests have dropped to below $10 million. In the judgment of the Colorado River Basin Salinity Control Forum (Forum), this amount is inappropriately low. Water quality commitments to downstream United States and Mexican water users must be honored while the Basin States continue to develop their Colorado River Compact-apportioned waters. Concentrations of salts in the river cause about $330 million in quantified damage in the United States with significantly greater unquantified damages. Damages occur from:

—a reduction in the yield of salt sensitive crops and increased water use for leaching in the agricultural sector,

—a reduction in the useful life of galvanized water pipe systems, water heaters, faucets, garbage disposals, clothes washers, and dishwashers, and increased use of bottled water and water softeners in the household sector,

—an increase in the use of water for cooling, and the cost of water softening, and a decrease in equipment service life in the commercial sector,

—an increase in the use of water and the cost of water treatment, and an increase in sewer fees in the industrial sector,

—a decrease in the life of treatment facilities and pipelines in the utility sector,

—difficulty in meeting wastewater discharge requirements to comply with National Pollutant Discharge Elimination System permit terms and conditions, and an increase in desalination and brine disposal costs due to accumulation of salts in groundwater basins,

—increased use of imported water for leaching and the cost of desalination and brine disposal for recycled water.

For every 30 mg/l increase in salinity concentrations, there is $75 million in additional damages in the United States. The Forum, therefore, believes implementation of the program needs to be accelerated to a level beyond that requested by the President.

The program authorized by the Congress in 1995 has proven to be very successful and very cost effective. Proposals from the public and private sector to implement salinity control strategies have far exceeded the available funding and Reclamation has a backlog of proposals. Reclamation continues to select the best and most cost-effective proposals. Funds are available for the Colorado River Basin States' cost sharing for the level of Federal funding requested by the Forum. Water quality improvements accomplished under Title II of the Colorado River Basin Salinity Control Act also benefit the quality of water delivered to Mexico. Although the United States has always met the commitments of the International Boundary & Water Commission's (Commission) Minute No. 242 to Mexico with respect to water quality, the

United States Section of the Commission is currently addressing Mexico's request for better water quality at the International Boundary.

Some of the most cost-effective salinity control opportunities occur when Reclamation can improve irrigation delivery systems at the same time that the U.S. Department of Agriculture's (USDA) program is working with landowners (irrigators) to improve the on-farm irrigation systems. Through the USDA Environmental Quality Incentives Program, adequate on-farm funds appear to be available and adequate Reclamation funds are needed to maximize the effectiveness of the effort. These salinity control efforts have secondary water conservation benefits at the point of use and downstream at the point of reuse.

OVERVIEW

In 2000, the Congress reviewed the program as authorized in 1995. Following hearings, and with administration support, the Congress passed legislation that increased the ceiling authorized for this program by $100 million. Reclamation has received cost-effective proposals to move the program ahead and the Basin States have funds available to cost-share up-front.

The Colorado River Basin Salinity Control Program was originally authorized by the Congress in 1974. The Title I portion of the Colorado River Basin Salinity Control Act responded to commitments that the United States made, through Minute No. 242, to Mexico concerning the quality of water being delivered to Mexico below Imperial Dam. Title II of the Act established a program to respond to salinity control needs of Colorado River water users in the United States and to comply with the mandates of the then newly legislated Clean Water Act. Initially, the Secretary of the Interior and Reclamation were given the lead Federal role by the Congress. This testimony is in support of adequate funding for the Title II program.

After a decade of investigative and implementation efforts, the Basin States concluded that the Salinity Control Act needed to be amended. The Congress revised the Act in 1984. That revision, while leaving implementation of the salinity control policy with the Secretary of the Interior, also gave new salinity control responsibilities to the USDA and to the Bureau of Land Management (BLM). The Congress has charged the administration with implementing the most cost-effective program practicable (measured in dollars per ton of salt removed). The Basin States are strongly supportive of that concept as the Basin States cost share 30 percent of Federal expenditures up-front for the salinity control program, in addition to proceeding to implement salinity control activities for which they are responsible in the Colorado River Basin.

The Forum is composed of gubernatorial appointees from Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming. The Forum has become the seven-State coordinating body for interfacing with Federal agencies and the Congress to support the implementation of the program necessary to control the salinity of the river system. In close cooperation with the Environmental Protection Agency (EPA) and pursuant to requirements of the Clean Water Act, every 3 years the Forum prepares a formal report analyzing the salinity of the Colorado River, anticipated future salinity, and the program elements necessary to keep the salinities at or below the concentrations in the river system in 1972 at Imperial Dam, and below Parker and Hoover Dams.

In setting water quality standards for the Colorado River system, the salinity concentrations at these three locations have been identified as the numeric criteria. The plan necessary for controlling salinity and reducing downstream damages has been captioned the "Plan of Implementation." The 2005 Review of water quality standards includes an updated Plan of Implementation. The level of appropriation requested in this testimony is in keeping with the agreed upon plan. If adequate funds are not appropriated, significant damages from the higher salt concentrations in the water will be more widespread in the United States and Mexico.

JUSTIFICATION

The $17,500,000 requested by the Forum on behalf of the seven Colorado River Basin States is the level of funding necessary to proceed with Reclamation's portion of the Plan of Implementation. In July of 1995, the Congress amended the Colorado River Basin Salinity Control Act. The amended Act gives Reclamation new latitude and flexibility in seeking the most cost-effective salinity control opportunities, and it provides for utilization of proposals from project proponents, as well as more involvement from the private as well as the public sector. The result is that salt loading is being prevented at costs often less than half the cost under the previous program. The Congress recommitted its support for the revised program when it enacted Public Law 106–459. The Basin States' cost sharing up-front adds 43 cents

for every Federal dollar appropriated. The federally chartered Colorado River Basin Salinity Control Advisory Council, created by the Congress in the Salinity Control Act, has met and formally supports the requested level of funding. The Basin States urge the Energy and Water Development Subcommittee to support the funding as set forth in this testimony.

ADDITIONAL SUPPORT OF FUNDING

In addition to the funding identified above for the implementation of the most recently authorized program, the Forum urges the Congress to appropriate funds requested by the administration to continue to maintain and operate salinity control facilities as they are completed and placed into long-term operation. Reclamation has completed the Paradox Valley unit which involves the collection of brines in the Paradox Valley of Colorado and the injection of those brines into a deep aquifer through an injection well. The continued operation of this project and the Grand Valley Unit will be funded primarily through the Facility Operations activity.

The Forum also supports funding to allow for continued general investigation of the Salinity Control Program as requested by the administration for the Colorado River Water Quality Improvement Program. It is important that Reclamation have planning staff in place, properly funded, so that the progress of the program can be analyzed, coordination between various Federal and State agencies can be accomplished, and future projects and opportunities to control salinity can be properly planned to maintain the water quality standards for salinity so that the Basin States can continue to develop their Colorado River Compact-apportioned waters.

PREPARED STATEMENT OF COLORADO SPRINGS UTILITIES

We are requesting your support for an appropriation in fiscal year 2007 of $4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: $3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; $1,090,000 for the San Juan River Basin Recovery Implementation Program; and $400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

LETTER FROM THE STATE ENGINEER'S OFFICE, STATE OF WYOMING

Cheyenne, WY, March 16, 2006.

The Honorable PETE V. DOMENICI, Chairman,
The Honorable HARRY REID, Ranking Member,
Energy and Water Development Subcommittee, Committee on Appropriations, United States Senate, 127 Dirksen Senate Office Building, Washington, DC 20510.

DEAR CHAIRMAN DOMENICI AND SENATOR REID: This letter is sent in support of fiscal year 2007 funding for the Bureau of Reclamation's Colorado River Basin Salinity Control Project—Title II Program. Congress has designated the Department of the Interior, Bureau of Reclamation (Reclamation), to be the lead agency for salinity control in the Colorado River Basin. A total of $17,500,000 is requested for fiscal year 2007 Reclamation activities to implement authorized Colorado River Basin salinity control program programs. Failure to appropriate these funds will directly result in significant economic damages being accrued by United States and Mexican water users.

In addition to the funding identified above for the implementation of the most recently authorized program, the State of Wyoming urges the Congress to appropriate funds requested by the administration to continue to maintain and operate salinity control facilities as they are completed and placed into long-term operation. Reclamation has completed the Paradox Valley unit which involves the collection of brines in the Paradox Valley of Colorado and the injection of those brines into a deep aquifer through an injection well. The continued operation of this project and

the Grand Valley Unit will be funded primarily through the Facility Operations activity.

The State of Wyoming also supports funding to allow for continued general investigation of the Salinity Control Program as requested by the administration for the Colorado River Water Quality Improvement Program. It is important that Reclamation have planning staff in place, properly funded, so that the progress of the program can be analyzed, coordination between various Federal and State agencies can be accomplished, and future projects and opportunities to control salinity can be properly planned to maintain the water quality standards for salinity so that the Basin States can continue to develop their Compact-apportioned waters of the Colorado River.

The Colorado River provides municipal and industrial water for 27 million people and irrigation water to nearly 4 million acres of land in the United States. The River is also the water source for some 2.3 million people and 500,000 acres in Mexico. Limitations on users' abilities to make the greatest use of this critically important water supply due to the River's high concentration of total dissolved solids (hereafter referred to as the salinity of the water) are a major concern in both the United States and Mexico. Salinity in water supplies affects agricultural, municipal, and industrial water users. While economic detriments and damages in Mexico are unquantified, the Bureau of Reclamation presently estimates salinity-related damages in the United States amount to $330 million per year. The River's high salt content is in almost equal part due to naturally occurring geologic features that include subsurface salt formations and discharging saline springs; and the resultant concentrating effects of our users man's storage, use and reuse of the waters of the River system. Over-application of irrigation water by agriculture is a large contributor of salt to the Colorado River as irrigation water moves below the crop root zone, seeps through saline soils and then returns to the river system.

The Environmental Protection Agency's interpretation of the 1972 amendments to the Clean Water Act required the seven Basin States to adopt water quality standards for salinity levels in the Colorado River. In light of the EPA's regulation to require water quality standards for salinity in the Basin, the Governors of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming created the Colorado River Basin Salinity Control Forum as an interstate coordination mechanism in 1973. To address these international and regionally important salinity problems, the Congress enacted the Colorado River Basin Salinity Control Act of 1974. Title I addressed the United States' obligations to Mexico to control the River's salinity to ensure the United States' water deliveries to Mexico are within the specified salinity concentration range. Title II of the Act authorized control measures upstream of Imperial Dam and directed the Secretary of the Interior to construct several salinity control projects, most of which are located in Colorado, Utah, and Wyoming.

Title II of the Act was again amended in 1995 and 2000 to direct the Bureau of Reclamation to conduct a basin-wide salinity control program. This program awards grants to non-Federal entities, on a competitive-bid basis, which initiate and carry out salinity control projects. The basin-wide program has demonstrated significantly improved cost-effectiveness, as computed on $1 per ton of salt basis, as compared to the prior Reclamation-initiated projects. The Forum was heavily involved in the development of the 1974 Act and its subsequent amendments, and continues to actively oversee the Federal agencies' salinity control program efforts.

During the past 32 years, the seven-State Colorado River Basin Salinity Control Forum has actively assisted the Federal agencies, including the Bureau of Reclamation, in implementing this unique and important program. At its October 2006 meeting, the Forum recommended that the Bureau of Reclamation seek to have appropriated and should expend for Colorado River Basin salinity control the sum of $17,500,000 in fiscal year 2007. We strongly believe the combined efforts of the salinity control efforts of the Bureau of Reclamation, Department of Agriculture and the Bureau of Land Management constitute one of the most successful Federal/State cooperative non-point source pollution control programs in the United States.

The State of Wyoming greatly appreciates the subcommittee's support of the Colorado River Salinity Control Program in past years. We strongly believe this important basin-wide water quality improvement program merits continued funding and support by your subcommittee. Thank you in advance for inclusion of this letter in the formal hearing record concerning fiscal year 2007 appropriations.

With best regards,

PATRICK T. TYRRELL,
Wyoming State Engineer.

LETTER FROM THE DUCHESNE COUNTY WATER CONSERVANCY DISTRICT

Roosevelt, UT, March 9, 2006.

The Honorable PETE DOMENICI,
Subcommittee on Energy and Water Development, Senate Appropriations Committee, United States Senate, 127 Dirksen Senate Office Building, Washington, DC 20510.

DEAR MR. DOMENICI: We are writing this letter to request your support for continued funding for the Colorado River Salinity Control Title II Program. This program has greatly assisted in removal of many tons of salt from the Colorado River, but there is still a great deal of work to be completed that will require an adequate level of funding. The seven Colorado River Basin States, as well as Mexico, have greatly benefitted from this important program. For many years high concentrations of salt in the Colorado River had severely damaged agricultural production in the West as well as resulting in poor quality water being delivered to Mexico.

Great strides have been made in improving water quality in the Colorado River since the inception of this program but we strongly feel that there is still a great deal to be done. We understand that the Colorado River Basin Salinity Control Forum is requesting $17,500,000 in funds be appropriated for this program for fiscal year 2007 and we would like to add our full support to that funding level request. We would also like to express support for the continued funding of the Natural Resource Conservation Service program, the Environmental Quality Incentive Program (EQIP) which works closely with the Salinity Program. It is very important that adequate funding levels be maintained for it also.

We request the subcommittee's assistance to ensure that the Colorado River Salinity Control Title II program and EQIP program are provided with continued adequate funding.

Sincerely,

RANDY CROZIER,
General Manager.

PREPARED STATEMENT OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

The Metropolitan Water District of Southern California is writing in support of the following Federal programs, in priority order, under the Bureau of Reclamation and Department of Energy's budgets that we believe are deserving of your subcommittee's support during the fiscal year 2007 budget process: (1) California Bay-Delta Restoration, $38.61 million; (2) South Delta Temporary Barriers, $2.0 million; (3) Atlas Mill Tailings Removal in Moab, Utah, $22.865 million; (4) Water Conservation Field Services Program, $0.7 million; (5) Lower Colorado River Investigations Program, Brine Management Study, $0.1 million; (6) Colorado River Front Work and Levee System, Water Management Reservoir Near the All American Canal Subactivity, $47.541 million; (7) Yuma Area Projects, Excavating Sediments Behind Laguna Dam, $4.654 million; (8) Colorado River Basin Salinity Control—Title II Basinwide Program; $17.5 million.

The Metropolitan Water District of Southern California is a public agency that was created in 1928 to meet the supplemental water demands of people living in what is now portions of a six-county region of southern California. Today, the region served by Metropolitan includes approximately 18 million people living on the coastal plain between Ventura and the international boundary with Mexico.

Included in our region are more than 300 cities and unincorporated areas in the counties of Los Angeles, Orange, San Diego, Riverside, San Bernardino, and Ventura. We provide over half of the water used in our 5,200-square-mile service area and help our members to develop local supplies through increased water conservation, recycling, storage and other resource-management programs. Metropolitan's imported water supplies come from the Colorado River via our Colorado River Aqueduct and from northern California via the State Water Project's California Aqueduct.

We are sensitive to the magnitude of these program requests during tight budget times. We are also committed to supporting these Federal programs as they are critical to meeting the challenges of water resources management and source water quality protection throughout California. These programs help to ensure long-term water security and meet the water quality requirements necessary to provide our member agencies with a safe, reliable water supply. We strongly urge your support for these funding requests.

CALIFORNIA BAY-DELTA RESTORATION

Metropolitan recommends your support of the President's fiscal year 2007 budget request of $38.61 million in new funding from the Bureau of Reclamation (Reclamation) for funding the Federal share of the CALFED Bay-Delta program to supplement the State's cost share. The Bay-Delta system is critical to the State's economy and provides potable water to two-thirds of California homes. Included in this budget are $10,890,000 for the Environmental Water Account; $11,385,000 to continue storage activities related to the Shasta Enlargement Study, Sites Reservoir, Upper San Joaquin Reservoir, and Los Vaqueros enlargement, and other study and planning activities; $5,198,000 for conveyance activities; $2,970,000 for science based studies; $2,970,000 for activities that will help meet water quality standards; $1,980,000 for ecosystem restoration; and $2,970,000 for planning and management activities. Metropolitan also supports an emphasis on funding for Delta Emergency Response actions, critical levee repairs, and CALFED habitat conservation planning activities.

SOUTH DELTA TEMPORARY BARRIERS

Metropolitan strongly recommends that $2.0 million be added to Reclamation's budget to fund the South Delta Temporary Barriers. The Temporary Barriers project would protect water quality in the southern Sacramento-San Joaquin Delta from salt water that normally intrudes into the Delta. As flow control structures, these structures would use normal tidal action to trap fresh water behind the structures to improve water quality and circulation in the South Delta, and to provide for use of this fresh water by local agricultural agencies. These Federal funds will leverage up to $6 million dollars in State funding.

ATLAS MINE TAILINGS CLEANUP

In cooperation with the Utah State Department of Environmental Quality, the Metropolitan Water District supports the President's budget request of $22.865 million in fiscal year 2007 for DOE for the purposes of moving forward with the cleanup of uranium mine tailings at the Atlas Site in Moab, Utah.

WATER CONSERVATION FIELD SERVICES PROGRAM

Metropolitan is requesting a $0.7 million augmentation of Reclamation's budget for the Water Conservation Field Services Program. This program encourages conservation of scarce water resources by providing assistance to State, agricultural, and urban water districts through training, technology transfer, technical guidance, and other related activities. The requested funding would be above Reclamation's current budget for the following programs and includes: $400,000 for the California Friendly program for water conservation to improve water efficiency in new construction and municipal landscapes; $100,000 for industrial water efficiency surveys to survey opportunities to conserve water in industrial water use; and $200,000 for weather based irrigation controller and market research activities to pilot innovative ways to speed distribution and acceptance of these landscape efficiency devices.

LOWER COLORADO RIVER INVESTIGATIONS PROGRAM, BRINE MANAGEMENT STUDY

Metropolitan is requesting an additional $0.1 million for the Lower Colorado River Investigations Program Brine Management Study in Reclamation's budget. This study continues Reclamation's work toward addressing brine concentrates. This additional money request would allow Reclamation to gather additional data with its partners, create a regional issue sensitivity analysis, and finalize and prioritize alternative solutions that manage brine concentrates in an economic and environmentally acceptable manner. The results of the study would also provide benefits for future seawater and brackish desalination projects.

COLORADO RIVER FRONT WORK AND LEVEE SYSTEM

Water Management Reservoir Near the All-American Canal Subactivity

Reclamation has completed a multi-phased study quantifying the need and options for regulatory storage to improve Colorado River management downstream of Lake Mead. Reclamation has concluded that locating up to a 10,000 acre-foot capacity water management reservoir in Imperial County near Drop 2 of the All-American Canal would be of great benefit to the Colorado River Basin States. Benefits include conservation of reservoir system storage, improving river regulation and water delivery scheduling, providing opportunities for water conservation, facili-

tating storage and conjunctive use programs, and setting the stage for new cooperative water supply and water quality management endeavors with Mexico.

Colorado River Front Work and Levee System Project funding of $47.541 million is needed in fiscal year 2007 in order to obtain permits, acquire land, clear and prepare the site, procure materials for construction, and for construction.

In recommending the Energy and Water Development appropriations bill provisions for fiscal year 2006, the conference committee submitted House Report 109–275 in which the conferees strongly recommended that Reclamation proceed aggressively with this work and to reflect the urgency of completing this project in future budget requests. The conferees noted that this project would provide needed improvements in river control and management, all of which are Federal responsibilities. The President's fiscal year 2007 request does not include funding needed for reservoir construction. Construction of the Drop 2 Reservoir is a high priority of the Seven Basin States. On February 3, 2006 the Basin States provided recommendations to the Secretary of the Interior on future operations of the Colorado River System. The States recommendations included creative opportunities to conserve water and improve system efficiencies, including the potential for non-Federal funding of certain efficiency improvement projects in exchange for benefits to the funding entity. Drop 2 Reservoir may provide an opportunity for such a partnership. We request that adequate Federal funds be provided in fiscal year 2007, that in concert with any non-Federal funding, will allow for the timely completion of the Drop 2 Reservoir.

YUMA AREA PROJECTS

Excavating Sediments Behind Laguna Dam

While work on a reservoir near the All-American Canal proceeds, there is an immediate need to restore limited Colorado River regulatory storage capacity downstream of Parker Dam. This can be partly accomplished by excavating sediments that have accumulated behind Laguna Dam since its completion in 1909. Reclamation funding of $4.654 million is needed in fiscal year 2007 to complete environmental compliance and procurement and begin dredging behind Laguna Dam.

This subactivity under the Yuma Area Projects, Facilities Maintenance and Rehabilitation Activity would restore 1,100 acre-feet of storage behind Laguna Dam. Not only would this enhance the ability to regulate flows arriving at Imperial Dam, it would capture and re-regulate the water periodically released for the proper operation of Imperial Dam, benefiting both the Colorado River Basin States and Mexico.

The President's fiscal year 2007 request for the sediment control subactivity is $1.154 million for completion of all necessary environmental documentation and engineering design. Metropolitan requests that Reclamation's funding for sediment control be augmented so as to provide a total of $4.654 million to ensure funds are available for the work to excavate sediments from behind Laguna Dam immediately upon completion of the environmental documentation.

The construction of a new regulating reservoir, and dredging sediments behind an existing dam will critically improve water delivery efficiencies and prevent the loss of over 100,000 and up to 300,000 acre-feet per year from Colorado River reservoir storage.

COLORADO RIVER BASIN SALINITY CONTROL PROGRAM—TITLE II

We ask for your support for additional Federal funding for Reclamation's Colorado River Basin Salinity Control Program (Salinity Control Program)—Title II. We request that Congress appropriate $17.5 million for implementation of the Title II—Basinwide Program, an increase of $8.59 million from the President's request of $8.91 million, to ensure water quality protection for this important source of water supply to Arizona, California, and Nevada through construction of off-farm measures to control Colorado River salinity. Concentrations of salts in the river cause hundreds of millions of dollars in damage in the United States.

We look forward to working with your office to further advance sound water management activities in California. Please contact me if I can answer any questions or provide additional information.

PREPARED STATEMENT OF THE NEW MEXICO INTERSTATE STREAM COMMISSION

SUMMARY

This statement is submitted in support of fiscal year 2007 appropriations for the Colorado River Basin salinity control program of the Department of the Interior's

Bureau of Reclamation. Congress designated the Bureau of Reclamation to be the lead agency for salinity control in the Colorado River Basin by the Colorado River Basin Salinity Control Act of 1974, and reconfirmed the Bureau of Reclamation's role by passage of Public Law 104–20. A total of $17.5 million is requested for fiscal year 2007 to implement the authorized Colorado River salinity control program of the Bureau of Reclamation. The President's appropriation request of $10 million is inadequate because studies have shown that the implementation of the salinity control program has fallen behind the pace needed to control damages from salinity. An appropriation of $17.5 million for Reclamation's salinity control program is necessary to protect water quality standards for salinity and to prevent unnecessary levels of economic damage from increased salinity levels in water delivered to the Lower Basin States of the Colorado River. In addition, funding for operation and maintenance of existing projects and sufficient general investigation funding is required to identify new salinity control opportunities.

STATEMENT

The water quality standards for salinity of the Colorado River must be protected while the Basin States continue to develop their compact apportioned waters of the river. The salinity standards for the Colorado River have been adopted by the seven Basin States and approved by EPA. While currently the standards have not been exceeded, salinity control projects must be brought on-line in a timely and cost-effective manner to prevent future effects that could cause the numeric criteria to be exceeded, and would result in unnecessary damages from higher levels of salinity in the water delivered to Lower Basin States of the Colorado River.

The Colorado River Basin Salinity Control Act was authorized by Congress and signed into law in 1974. The seven Colorado River Basin States, in response to the Clean Water Act of 1972, formed the Colorado River Basin Salinity Control Forum, a body comprised of gubernatorial representatives from the seven States. The Forum was created to provide for interstate cooperation in response to the Clean Water Act and to provide the States with information necessary to comply with Sections 303(a) and (b) of the Act. The Forum has become the primary means for the Basin States to coordinate with Federal agencies and Congress to support the implementation of the salinity control program for the Colorado River Basin.

Bureau of Reclamation studies show that damages from the Colorado River to United States water users are about $330,000,000 per year. Damages are estimated at $75,000,000 per year for every additional increase of 30 milligrams per liter in salinity of the Colorado River. Control of salinity is necessary for the States of the Colorado River Basin, including New Mexico, to continue to develop their compact-apportioned waters of the Colorado River.

Timely appropriations for the funding of the salinity control program are essential to comply with the water quality standards for salinity, prevent unnecessary economic damages in the United States, and protect the quality of the water that the United States is obligated to deliver to Mexico. The Basin States and Federal agencies agree that increases in the salinity of the Colorado River will result in significant increases in damages to water users in the Lower Colorado River Basin. An appropriation of only the amount specified in the President's budget request is inadequate to protect the quality of water in the Colorado River and prevent unnecessary salinity damages in the States of the Lower Colorado River Basin. Although the United States has always met the water quality standard for salinity of water delivered to Mexico under Minute No. 242 of the International Boundary and Water Commission, the United States through the U.S. Section of IBWC is currently addressing a request by Mexico for better quality water. Thus, continued strong support and adequate funding of the salinity control program is required to control salinity-related damages in the United States and Mexico.

Congress amended the Colorado River Basin Salinity Control Act in July 1995 (Public Law 104–20). The salinity control program authorized by Congress by the amendment has proven to be very cost-effective, and the Basin States are standing ready with up-front cost sharing. Proposals from public and private sector entities in response to the Bureau of Reclamation's advertisement have far exceeded available funding. Basin States cost sharing funds are available for the $17.5 million appropriation request for fiscal year 2007. The Basin States cost sharing adds 43 cents for each Federal dollar appropriated.

Public Law 106–459 gave the Bureau of Reclamation additional spending authority for the salinity control program. With the additional authority in place and significant cost sharing available from the Basin States, it is essential that the salinity control program be funded at the level requested by the Forum and Basin States to protect the water quality of the Colorado River. Some of the most cost-effective

salinity control opportunities occur when Reclamation improves irrigation delivery systems concurrently with on-farm irrigation improvements undertaken by the U.S. Department of Agriculture's Environmental Quality Incentives Program (EQIP). The Basin States cost-share funding is available for both parts, on-farm and off-farm, and EQIP funding appears to be adequate to accomplish needed on-farm work. Adequate funding for Reclamation off-farm work is needed to maintain timely implementation and effectiveness of salinity control measures.

Maintenance and operation of the Bureau of Reclamation's salinity control projects and general investigations to identify new cost-effective salinity control projects are necessary for the continued success of the salinity control program. Investigation of new opportunities for salinity control are critical while the Basin States continue to develop and use their compact-apportioned waters of the Colorado River. The water quality standards for salinity and the United States water quality requirements pursuant to treaty obligations with Mexico are dependent on timely implementation of salinity control projects, adequate funding to maintain and operate existing projects, and sufficient general investigation funding to determine new cost-effective opportunities for salinity control.

Continued funding primarily through Reclamation's Facility Operation activity to support maintenance and operation the Paradox Valley Unit and the Grand Valley Unit is critically needed. General Investigation funding through Reclamation's Colorado River Water Quality Improvement Program has been lacking in the recent past, and needs to be restored to a level that supports the need for identification and study of new salinity control opportunities to maintain the levels of salinity control to meet water quality standards and control economic damages in the Lower Colorado River Basin.

I urge the Congress to appropriate $17.5 million to the Bureau of Reclamation for the Colorado River Basin salinity control program, adequate funding for operation and maintenance of existing projects and adequate funding for general investigations to identify new salinity control opportunities. Also, I fully support testimony by the Forum's Executive Director, Jack Barnett, in request of this appropriation, and the recommendation of an appropriation of the same amount by the federally chartered Colorado River Basin Salinity Control Advisory Council.

PREPARED STATEMENT OF THE COLORADO RIVER COMMISSION OF NEVADA

As a Nevada representative of the Colorado River Basin Salinity Control Forum, the Colorado River Commission of Nevada (CRC) supports funding the fiscal year 2007 budget request for $17,500,000 for the Bureau of Reclamation's Colorado River Basin Salinity Control Program. The CRC urges the Congress to appropriate funds requested by the administration to continue to maintain and operate salinity control facilities as they are completed and placed into long-term operations. Reclamation has completed the Paradox Valley unit which involves the collection of brines in the Paradox Valley of Colorado and the injection of those brines into a deep aquifer through an injection well. The continued operation of this project and the Grand Valley Unit will be funded primarily through the Facility Operations activity. The CRC also supports funding to allow for continued general investigation of the Salinity Control Program as requested by the administration for the Colorado River Water Quality Improvement Program.

Salinity remains one of the major problems in the Colorado River. Congress has recognized the need to confront this problem with its passage of Public Law 93–320 and Public Law 98–569. Your support of the Forum's current funding recommendations in support of the Colorado River Basin Salinity Control Program is essential to move the program forward so that the congressionally directed salinity objectives embodied in Public Law 93–320 and Public Law 98–569 are achieved.

PREPARED STATEMENT OF THE RED RIVER VALLEY ASSOCIATION

BUREAU OF RECLAMATION

Mr. Chairman and members of the committee, I am Wayne Dowd, and pleased to represent the Red River Valley Association as its President. Our organization was founded in 1925 with the express purpose of uniting the citizens of Arkansas, Louisiana, Oklahoma and Texas to develop the land and water resources of the Red River Basin.

The Resolutions contained herein were adopted by the Association during its 80th Annual Meeting in Bossier City, Louisiana on February 24, 2005, and represent the

combined concerns of the citizens of the Red River Basin Area as they pertain to the goals of the Association.

Our "western rivers" played a very important part in the development and economic success of the States west of the Mississippi River. An agency responsible for the development of those water resources has been the Bureau of Reclamation. In our four-State region they have been most active in Oklahoma.

I would like to comment on three specific requests for the future economic well-being of the citizens residing in the Red River Valley region in Oklahoma. We support the following studies and request that the Bureau of Reclamation be funded at their full fiscal year 2007 capability.

North Fork of the Red River, OK, Investigation Study.—The W.C. Austin (Altus Lake and Dam) Project in southwestern Oklahoma, is authorized to provide water for irrigation to approximately 48,000 acres of privately owned land in southwestern Oklahoma; control flooding on the North Fork of the Red River and augment municipal water supply for the City of Altus. Secondary benefits include fish and wildlife conservation and recreation opportunities. Project features include Altus Dam, four canals, a 221-mile lateral distribution system and 26 miles of drains. The Lugert-Altus Irrigation District (LAID) is responsible for operation and maintenance of the project.

Water demand in the District and region is growing which, in turn, is reducing future water availability and economic development opportunities. This proposed investigation would: (1) develop a hydrologic model of the NFRR watershed; and (2) evaluate opportunities for augmenting water availability in the project region.

We support a comprehensive evaluation of water resources in the North Fork of the Red River in Oklahoma. We sincerely appreciate your support in past appropriations.

An allocation of $300,000 is requested for the fiscal year 2007 appropriations.

Arbuckle-Simpson Aquifer Study.—The Arbuckle-Simpson Aquifer has been designated a sole source aquifer by EPA and a large number of Oklahomans depend on its protection for their health and economic future. This is an important source of water supply for: the citizens of Ada, Sulphur, Mill Creek and Roff; the Chickasaw National Recreational Area; Chickasaw and Choctaw Tribal members; and many farmers and ranchers owning land overlying the basin. Contributions from the aquifer also provide the perennial flow for many streams and natural springs in the area. The Arbuckle-Simpson Aquifer underlines approximately 500 square miles of south-central Oklahoma.

During recent years, a number of issues have emerged which have caused concerns about the utilization and continued health of the aquifer. These concerns include issues over water use, exportation of water out of the area, impacts of groundwater development on the flows in the significant springs and rivers, and competition for water and water quality.

In order to assure the future well-being of the aquifer we support a 5-year study to include detailed assessments of: the formation's hydrogeology, water quality and vulnerability; groundwater-surface water interactions; land use changes and related impacts; Tribal-State water rights; and overall management of the resources. We appreciate your support of this study by funding the last 3 years of the study.

We request $1,500,000 be appropriated for fiscal year 2007 and support that the study be cost shared, 90 percent Federal and 10 percent State/Local funds.

Fort Cobb, Washita Basin Project, Water Supply Augmentation Appraisal Study.—Fort Cobb Reservoir is located at river mile 7.4 on Pond (Cobb) Creek, a tributary of the Washita River, in the Red River Basin in Caddo County, about 14 miles northwest of Anadarko. The project is authorized for flood control, municipal water supply, fish and wildlife and recreation. Construction of the project, by the Bureau of Reclamation, began in February of 1958 and was completed in March of 1959. The project is designed to provide about 11.9 MGD of water supply.

Over the past several years, the Fort Cobb Master Conservancy District has begun to experience difficulty in delivering sufficient water through their aqueduct to meet the peak demands of the service population. Although the total demand has not yet exceeded the amount contracted to the member cities and other user entities, there is an urgent need to evaluate opportunities for augmentation of the project supply to ensure the ability to meet the future needs of the member communities. The appraisal study would evaluate both surface and ground water resources in the area and look at alternatives to augment available water supply from the project.

The RRVA requests the appropriation of $100,000 in the Bureau of Reclamation's fiscal year 2007 budget to conduct an appraisal study of water supply augmentation options at the Fort Cobb Reservoir, Washita Basin Project.

The Red River Valley Association understands these are difficult times with our Nation's budget, so we appreciate your support for these studies in the past. We feel they are extremely important to the welfare of the citizens in Oklahoma and request that you again support these studies in fiscal year 2007.

We are always available to provide additional information and answer whatever questions you may have.

ENCLOSURE 1

RED RIVER VALLEY ASSOCIATION

The Red River Valley Association is a voluntary group of citizens bonded together to advance the economic development and future well being of the citizens of the four-State Red River Basin area in Arkansas, Louisiana, Oklahoma and Texas.

For the past 80 years, the Association has done notable work in the support and advancement of programs to develop the land and water resources of the Valley to the beneficial use of all the people. To this end, the Red River Valley Association offers its full support and assistance to the various agricultural organizations and other local governmental entities in developing the area along the Red River.

The Resolutions contained herein were adopted by the Association during its 801st Annual Meeting in Bossier City, Louisiana on February 24, 2006, and represent the combined concerns of the citizens of the Red River Basin Area as they pertain to the goals of the Association, specifically:

—Economic and Community Development;
—Environmental Restoration;
—Flood Control;
—Bank Stabilization;
—A Clean Water Supply for Municipal, Industrial and Agricultural Uses;
—Recreation; and,
—Navigation.

The Red River Valley Association is aware of the constraints on the Federal budget, and has kept those restraints in mind as these Resolutions were adopted. Therefore, and because of the far-reaching regional and national benefits addressed by the various projects covered in these Resolutions, we urge the members of Congress to review the material contained herein and give serious consideration to funding these initiatives at the levels requested.

PREPARED STATEMENT OF THE SANTA CLARA VALLEY WATER DISTRICT

CALFED BAY-DELTA PROGRAM—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support for a fiscal year 2007 administration budget request of $38.6 million and an appropriation add-on of $61.4 million, for a total of $100 million for California Bay-Delta Restoration.

STATEMENT OF SUPPORT

Background.—In an average year, half of Santa Clara County's water supply is imported from the San Francisco Bay/Sacramento-San Joaquin Delta estuary (Bay-Delta) watersheds through three water projects: the State Water Project, the Federal Central Valley Project, and San Francisco's Hetch Hetchy Project. In conjunction with locally-developed water, this water supply supports more than 1.7 million residents in Santa Clara County and the most important high-tech center in the world. In average-to-wet years, there is enough water to meet the county's long-term needs. In dry years, however, the county could face a water supply shortage of as much as 100,000 acre-feet per year, or roughly 20 percent of the expected demand. In addition to shortages due to hydrologic variations, the county's imported supplies have been reduced due to regulatory restrictions placed on the operation of the State and Federal water projects.

There are also water quality problems associated with using Bay-Delta water as a drinking water supply. Organic materials and pollutants discharged into the Delta, together with salt water mixing in from San Francisco Bay, have the potential to create disinfection by products that are carcinogenic and pose reproductive health concerns.

Santa Clara County's imported supplies are also vulnerable to extended outages due to catastrophic failures such as major earthquakes and flooding.

Project Synopsis.—The CALFED Bay-Delta Program is an unprecedented, cooperative effort among Federal, State, and local agencies to restore the Bay-Delta. With input from urban, agricultural, environmental, fishing, and business interests, and the general public, CALFED has developed a comprehensive, long-term plan to address ecosystem and water management issues in the Bay-Delta.

Restoring the Bay-Delta ecosystem is important not only because of its significance as an environmental resource, but also because failing to do so will stall efforts to improve water supply reliability and water quality for millions of Californians and the State's trillion-dollar economy and job base.

The passage of H.R. 2828 in 2004 reauthorized Federal participation in the CALFED Bay-Delta Program and provided $389 million in new and expanded funding authority for selected projects, including the San Luis Reservoir Low Point Improvement Project. The San Luis Project is one of six new projects, studies or water management actions authorized to receive a share of up to $184 million under the conveyance section of the bill. It is critical that Federal funding be provided to implement the actions authorized in the bill in the coming years.

Fiscal Year 2006 Funding.—$37 million was appropriated for CALFED activities in fiscal year 2006.

Fiscal Year 2007 Funding Recommendation.—It is requested that the committee support an appropriation add-on of $61.4 million, in addition to the $38.6 million in the administration's fiscal year 2007 budget request, for a total of $100 million for California Bay-Delta Restoration.

SAN JOSE AREA WATER RECLAMATION AND REUSE PROGRAM (SOUTH BAY WATER RECYCLING PROGRAM)—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support for a fiscal year 2007 administration budget request of $495,000 and an appropriation add-on of $3.61 million, for a total of $4.1 million to fund the program's work.

STATEMENT OF SUPPORT

Background.—The San Jose Area Water Reclamation and Reuse Program, also known as the South Bay Water Recycling Program, will allow the City of San Jose and its tributary agencies of the San Jose/Santa Clara Water Pollution Control Plant to protect endangered species habitat, meet receiving water quality standards, supplement Santa Clara County water supplies, and comply with a mandate from the U.S. Environmental Protection Agency and the California Water Resources Control Board to reduce wastewater discharges into San Francisco Bay.

The Santa Clara Valley Water District (District) collaborated with the City of San Jose to build the first phase of the recycled water system by providing financial support and technical assistance, as well as coordination with local water retailers. The design, construction, construction administration, and inspection of the program's transmission pipeline and Milpitas 1A Pipeline was performed by the District under contract to the City of San Jose.

Status.—The City of San Jose is the program sponsor for Phase 1, consisting of almost 60 miles of transmission and distribution pipelines, pump stations, and reservoirs. Completed at a cost of $140 million, Phase 1 began partial operation in October 1997. Summertime 2004 deliveries averaged 10.6 million gallons per day of recycled water. The system now serves over 517 active customers and delivers approximately 7,200 acre-feet of recycled water per year.

Phase 2 is now underway. In June 2001, San Jose approved an $82.5 million expansion of the program. The expansion includes additional pipeline extensions into the cities of Santa Clara and Milpitas, a major pipeline extension into Coyote Valley in south San Jose, and reliability improvements of added reservoirs and pump stations. The District and the City of San Jose executed an agreement in February 2002 to cost-share on the pipeline into Coyote Valley and discuss a long-term partnership agreement on the entire system. Phase 2's near-term objective is to increase deliveries by the year 2010 to 15,000 acre-feet per year.

Funding.—In 1992, Public Law 102–575 authorized the Bureau of Reclamation to work with the City of San Jose and the District to plan, design, and build demonstration and permanent facilities for reclaiming and reusing water in the San Jose metropolitan service area. The City of San Jose reached an agreement with the Bureau of Reclamation to cover 25 percent of Phase 1's costs, or approximately $35 million; however, Federal appropriations have not reached the authorized amount. To date, the program has received $26.62 million of the $35 million authorization.

Fiscal Year 2006 Funding.—$422,000 was appropriated in fiscal year 2006.

Fiscal Year 2007 Funding Recommendation.—It is requested that the congressional committee support an appropriation add-on of $3.61 million, in addition to the $495,000 in the administration's fiscal year 2007 budget request, for a total of $4.1 million to fund the program's work.

SAN LUIS RESERVOIR LOW POINT IMPROVEMENT PROJECT—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support for a fiscal year 2007 administration budget request of $1.485 million and an appropriation add-on of $5.515 million, for a total of $8 million, to complete the Feasibility Study. This request is included in the $100 million CALFED Bay-Delta Program appropriation request.

STATEMENT OF SUPPORT

Background.—San Luis Reservoir is one of the largest reservoirs in California, and is the largest "off-stream" water storage facility in the world. The Reservoir has a water storage capacity of more than 2 million acre-feet and is a key component of the water supply system serving the Federal Central Valley Project (CVP) and California's State Water Project. San Luis is used for seasonal storage of Sacramento-San Joaquin delta water that is delivered to the reservoir via the California Aqueduct and Delta-Mendota Canal. The San Luis Reservoir is jointly owned and operated by the U.S. Bureau of Reclamation and the California Department of Water Resources.

The San Luis Reservoir provides the sole source of CVP water supply for the San Felipe Division contractors—Santa Clara Valley Water District (District), San Benito County Water District and, in the future, Pajaro Valley Water Management Agency. When water levels in San Luis Reservoir are drawn down in the spring and summer, high water temperatures result in algae blooms at the reservoir's water surface. This condition degrades water quality, making the water difficult or impractical to treat and can preclude deliveries of water from San Luis Reservoir to San Felipe Division contractors. In order to avoid the "low point" problem, the reservoir has been operated to maintain water levels above the critical low elevation—the "low point"—resulting in approximately 200,000 acre-feet of undelivered water to south of the Delta State and Federal water users.

Project Goals and Status.—The goal of the project is to increase the operational flexibility of storage in San Luis Reservoir and ensure a high quality, reliable water supply for San Felipe Division contractors. The specific project objectives are to: (1) Increase the operational flexibility of San Luis Reservoir by increasing the effective storage; (2) Ensure that San Felipe Division contractors are able to manage their annual Central Valley Project contract allocation to meet their water supply and water quality commitments; (3) Provide opportunities for project-related environmental improvements; and (4) Provide opportunities for other project-related improvements.

Preliminary studies by the District have identified six potential alternatives to solve the problem. More funding is needed to fully explore these alternatives.

The passage of H.R. 2828 in 2004 reauthorized Federal participation in the CALFED Bay-Delta Program. The San Luis Reservoir Low Point Improvement Project was one of six new projects, studies or water management actions authorized in the bill to receive a share of up to $184 million authorized under the conveyance section of the bill.

Fiscal Year 2006 Funding.—$2 million was appropriated in the fiscal year 2006 CALFED appropriation.

Fiscal Year 2007 Funding Recommendation.—It is requested that the congressional committee support an appropriation add-on of $5.515 million, in addition to the $1.485 million in the administration's fiscal year 2007 budget request, for a total of $8 million for the San Luis Reservoir Low Point Improvement Project. The San Luis request is included in the $100 million CALFED Bay-Delta appropriation request.

PREPARED STATEMENT OF THE COLORADO RIVER ENERGY DISTRIBUTORS ASSOCIATION

The Colorado River Energy Distributors Association (CREDA) appreciates this opportunity to submit its views on recommendations in the President's fiscal year 2007 budget proposal that affect specific programs of the Bureau of Reclamation (Bureau) and the Western Area Power Administration (Western) in the Energy and Water Development Act of 2007. Our testimony will address two issues:

—Our request for the inclusion of language to fund additional, post 9/11 security measures at multi-purpose Federal dams from non-reimbursable appropriations; and

—Our opposition to the proposal to change interest rate calculations of the Federal Power Marketing Administrations.

CREDA is a non-profit, regional organization representing 155 consumer-owned, non-profit municipal and rural electric cooperatives, political subdivisions, irrigation and electrical districts and tribal utility authorities that purchase hydropower resources from the Colorado River Storage Project (CRSP). CRSP is a multi-purpose Federal project that provides flood control, water storage for irrigation, municipal and industrial purposes; recreation and environmental mitigation, in addition to the generation of electricity. CREDA was established in 1978 and serves as the "voice" of CRSP contractor members in dealing with resource availability and affordability issues. CREDA represents its members in dealing with the Bureau—as the owner and operator of the CRSP—and with Western—as the marketing agency for CRSP hydropower.

CREDA members serve over 4 million electric consumers in six western States: Arizona, Colorado, Nevada, New Mexico, Utah and Wyoming. CREDA's member utilities purchase more than 85 percent of the power produced by the CRSP.

COSTS OF INCREASED SECURITY AT FEDERAL MULTI-PURPOSE PROJECTS

Following the attacks of September 11, 2001, the Bureau of Reclamation (Bureau) embarked upon an aggressive program to enhance the security of Federal dams to protect the facilities against terrorist attacks. Based on historical precedent dating to World War II, the Bureau determined in 2002 that the costs of increased security measures should remain a non-reimbursable obligation of the Federal Government.

For fiscal year 2003, the Bureau received $28.4 million in Energy and Water Development Appropriations Act (Public Law 108–7) and an additional $25 million in supplemental appropriations. The Bureau also received $28.5 million for increased security costs in the Energy and Water Development Appropriations Act of 2004 (Public Law 108–137).

Due to budget constraints, the President's fiscal year 2005 budget directed the Bureau to recover $12 million from entities that benefit from the multi-purpose projects. Of that amount, power customers were asked to pay an estimated 94 percent. Federal power customers objected, citing legislative precedent and the fact that the additional security measures are intended to protect all features of the Federal multi-purpose projects, not just the power features, from attack and destruction. In fact, in the event of a catastrophic failure of these projects, the power function could most likely be the purpose least impacted.

Further, power users noted that Bureau's decision to allocate a majority of the reimbursable costs to power users was not based on any objective or risk analysis of the benefits of the security upgrades.

Congress has spoken annually regarding treatment of these costs. In report language accompanying the Energy and Water Development Appropriations Act of 2005 (Public Law 108–447), Congress recognized the dramatic increase in security needs and corresponding costs at Reclamation facilities following the September 11, 2001 attacks on our country. Congress also recognized that the Reclamation security posture "will not likely approach pre-September 11, 2001 levels for many years, if ever." The conference committee then underscored its concern for the reimbursability of security costs by including the following directive to the Bureau:

"Reclamation shall provide a report to the conference no later than May 1, 2005, with a breakout of planned reimbursable and non-reimbursable security costs by project, by region. The conference directs the Commissioner [of Reclamation] not to begin the reimbursement process until the Congress provides direct instruction to do so."

The May 2005 Report indicated the desire of the Bureau to collect the costs of guards and patrols from project beneficiaries (primarily power) based on the existing project cost allocations for operation and maintenance. In the CRSP, this would require about 95 percent of the costs to be borne by the power customers.

In the Energy and Water Development Appropriations Act of 2006 (HR 2419, November 7, 2005), Congress directed that $10 million of the estimated $18 million for guards and patrols be provided by reimbursable funding. Further, Congress directed that a report to Congress be provided with further detail in 60 days.

". . . the Bureau of Reclamation is expected to receive approximately $10,000,000 in reimbursements for additional security guards and patrols, which are considered project O&M costs. The conferees agree, however, that all project beneficiaries that

benefit from an enhanced security posture at the Bureau's facilities should pay a share of the security costs. Accordingly, the Bureau is directed to provide to the House and Senate Committees on Appropriations, not later than 60 days after the enactment of this Act, a delineation of planned reimbursable security costs by project prorated by all project purposes."

The report (issued in March 2006) is similar to the previous (May 2005) report, except that it also includes "facility fortification upgrades" as a reimbursable cost. Previously the USBR had assured its stakeholders that only the costs of guards and patrols would be reimbursable. This additional obligation in essence makes EVERYTHING reimbursable at some point.

CREDA believes that the historic rationale established in the 1942 and 1943 Interior Department Appropriation Acts for treating costs of increased security at multipurpose Federal projects as non-reimbursable obligations of the Federal Government is still valid. We urge Congress to add language to the Energy and Water Development Appropriations Act of 2007 to clarify that all costs of increased security at dams owned and operated by the Bureau of Reclamation be non-reimbursable.

POWER MARKETING ADMINISTRATION INTEREST RATE PROPOSAL

The administration's fiscal year 2007 budget includes a recommendation that would raise electricity rates by changing the interest rate charged by the Southeastern Power Administration (SEPA), the Southwestern Power Administration (SWPA), and the Western Area Power Administration (WAPA) on all new investments in projects whose interest rates are not set by law. Specifically, the Department of Energy's (DOE) budget calls for the these three Power Marketing Administrations (PMAs) to set their interest rates at the level that government corporations pay to borrow funds from the Federal Government. To implement this proposal, (DOE) will amend the regulation that governs how the PMAs establish their rates and will do so administratively, without any consultation with or action from Congress.

The administration's budget proposes to increase the interest rate charged on all new investments in these hydroelectric facilities to a level that is charged government corporations—the rate that reflects the interest cost for the Federal Government to provide loans to government corporations. SEPA, SWPA and WAPA are neither government corporations nor do they borrow funds from the U.S. Treasury. All rates are set to recover the dollars appropriated by Congress for the investment in the hydroelectric facilities and to cover the cost to operate these projects. If implemented, this proposal could increase rates considerably for customers served by most of the Power Marketing Administrations.

This proposal creates a serious precedent and should be rejected, because:

—The process for implementing the proposal can be done without congressional involvement or approval;

—The proposal would arbitrarily raise revenue from electric customers for deficit reduction; and

—The proposal reverses decades of rate making precedent and accepted cost recovery practices by administrative fiat.

We urge the subcommittee to reject this proposal.

PREPARED STATEMENT OF THE FORT PECK ASSINIBOINE AND SIOUX TRIBES AND DRY PRAIRIE RURAL WATER SYSTEM

The Fort Peck Assiniboine and Sioux Tribes and Dry Prairie Rural Water respectfully request fiscal year 2007 appropriations in the amount of $29,797,000 for the Bureau of Reclamation from the subcommittee on Energy and Water Development. Funds will be used to construct critical elements of the Fort Peck Reservation Rural Water System, Montana, (Public Law 106–382, October 27, 2000). The amount requested is based on need to build critical project elements and is well within capability to spend the requested funds as set out below:

FISCAL YEAR 2007 WORK PLAN—FORT PECK RESERVATION RURAL WATER SYSTEM (PUBLIC LAW 106–382)

	Amount
Fort Peck Tribes:	
Work Plan (100 Percent Federal)	$15,626,000

FISCAL YEAR 2007 WORK PLAN—FORT PECK RESERVATION RURAL WATER SYSTEM (PUBLIC LAW 106–382)—Continued

	Amount
Water Treatment Plant Pipelines:	
Poplar to Big Muddy	5,021,000
Poplar to Wolf Point	3,296,000
FP OM Buildings	654,000
TOTAL	24,597,000
Dry Prairie:	
Work Plan (Branch Pipelines): A, Bainville and Other Branch Lines:	
Federal	5,246,000
State and Local	1,259,000
TOTAL	6,505,000
Federal	29,843,000
State and Local	1,259,000
Total	31,102,000

The sponsor Tribes and Dry Prairie greatly appreciate the previous appropriations from the subcommittee that have permitted building the Missouri River intake, the critical water source, and the first phase of the Culbertson to Medicine Lake Pipeline Project.

The request is less than the average annual appropriations needed to complete the project in fiscal year 2012 ($34,446,000), as provided by the authorizing legislation, but is within our capability to use:

	Fiscal Year 2007
Total Federal Funds Authorized (October 2005 Dollars)	$247,267,000
Federal Funds Expended Through Fiscal Year 2006	$40,590,000
Percent Complete	16.42
Amount Remaining	$206,677,000
Average Annual Required for Fiscal Year 2012 Finish (Public Law 106–382)	$34,446,000
Fiscal Year 2006 Amount Requested	$29,797,000
Years to Complete	6

Note that cost indexing from last year due to inflation increased the cost of the project from $235 million to $247 million, an increase of $12 million. Increases in the level of appropriations are needed to outpace inflation.

PROPOSED ACTIVITIES

Public Law 106–382 (October 27, 2000) authorized this project, which includes all of the Fort Peck Indian Reservation in Montana and the Dry Prairie portion of the project outside the Reservation.

Fort Peck Indian Reservation

On the Fort Peck Indian Reservation the Tribes have used appropriations from previous years to construct the Missouri River raw water intake, a critical feature of the regional water project. The raw water pump station has also been constructed, and the raw water pipeline between the Missouri River and the water treatment plant has been constructed to within 2 miles of the water treatment plant. The sludge lagoons at the water treatment plant are currently under construction. All projects have bid under the engineer's estimate. The critical Missouri River water treatment plant will begin construction in spring 2006 and will use $12.600 million of funds on hand. At a cost of $31.0 million the project (contract and non-contract costs) will be constructed over a 3-year period. Fiscal year 2007 funds of $15.573 million are needed to honor the construction contract. The remaining funds would be requested in fiscal year 2008.

The request for fiscal year 2007 also provides for construction of pipelines from the water treatment plant toward the communities of Poplar (Poplar to Big Muddy) and Wolf Point (Poplar to Wolf Point). These are the principal core pipelines that extend east and west of the water treatment plant to serve the Fort Peck Indian

Reservation and to connect to Dry Prairie facilities on the east and west boundaries of the Reservation. The funds for the pipeline projects are $5.025 and $3.299 million, respectively. The Tribes will also use $654,000 for an administration, operation and maintenance building. The Bureau of Reclamation can confirm that the use of funds proposed for fiscal year 2007 is well within the project's capability.

The pipeline project from the water treatment plant to Poplar will provide a source of water for a section of the Fort Peck Indian Reservation contaminated by oil drilling operations and the subject of EPA orders to the responsible oil company. There is urgency in completing the pipeline to Poplar before the advancing plume of contamination reaches existing community wells. The oil company will provide the distribution system necessary to mitigate the problems and the Assiniboine and Sioux Rural Water System will provide the interconnecting pipeline without duplicating any facilities identified in the Final Engineering Report.

Dry Prairie

Dry Prairie has used previous appropriations to construct core pipelines and a booster pump station from the community of Culbertson to serve the communities of Froid and Medicine Lake. This project represents a significant portion of the main core pipeline for the eastern half of the Dry Prairie Project. Pipelines were sized to serve the area north of the Missouri River, south of the Canadian border and between the Fort Peck Indian Reservation and the North Dakota border (see general location map attached).

The project relies on interim water supplies. The regional water treatment plant will provide finished water when pipelines are constructed to the interconnection point for Dry Prairie at the Big Muddy River. The project between Culbertson, Froid and Medicine Lake is in full operation and serves the last two mentioned communities and a small number of rural users.

The completed system provides Dry Prairie with capability to build branch pipelines and connect rural areas in the south half of the east half of the Dry Prairie Project. Bainville and Dane Valley residents can be served with the existing system capacity that is now constructed and in operation. Fiscal year 2006 funds are being used to construct part of the distribution to this area.

The request for fiscal year 2007 funds of $5,246,000, supplemented by a non-Federal cost share of $1,259,000, will be used to finish branch pipelines connecting with the Culbertson-Froid-Medicine Lake core pipeline. Additional funds will be available to build other branch lines in other areas of the project and continue bringing high quality water to rural users in need. The Bureau of Reclamation can confirm the capability to construct these pipelines based on the current status of design.

ADMINISTRATION'S SUPPORT

The Tribes and Dry Prairie worked extremely well and closely with the Bureau of Reclamation prior to and following the authorization of this project in fiscal year 2000. The Bureau of Reclamation has heavily reviewed and commented on the Final Engineering Report, and all comments were incorporated into the report and agreement was reached on final presentation. OMB reviewed the Final Engineering Report prior to its submission to Congress in the final step of the approval process. The Commissioner, Regional and Area Offices of the Bureau of Reclamation have been consistently in full agreement with the need, scope, total costs, and the ability to pay analysis that supported the Federal and non-Federal cost shares. There have been no areas of disagreement or controversy in the formulation of the project.

The Bureau of Reclamation collaborated with the Tribes and Dry Prairie to conduct and complete value engineering investigations of the Final Engineering Report (planning), the Culbertson to Medicine Lake pipeline (design), the Poplar to Big Muddy River pipeline (design), the Missouri River intake (design) and on the regional water treatment plant (design). Each of these considerable efforts has been directed at ways to save construction and future operation, maintenance and replacement costs as planning and design proceeded. Agreement with Reclamation has been reached in all value engineering sessions on steps to take to save Federal and non-Federal costs in the project.

The Bureau of Reclamation conducted independent review of the final plans and specifications for the Missouri River raw water intake, the regional water treatment plant and the Culbertson to Medicine Lake Project. The agency participated heavily during the construction phases of those projects and concurred in all aspects of construction from bidding through the completion of construction. (The regional water treatment plant has not yet been constructed).

Cooperative agreements have been developed and executed from the beginning phases to date between the Bureau of Reclamation and the Tribes and between Bureau of Reclamation and Dry Prairie. Those cooperative agreements carefully set out

goals, standards and responsibilities of the parties for planning, design and construction. All plans and specifications are subject to levels of review by the Bureau of Reclamation pursuant to the cooperative agreements. The sponsors do not have the power to undertake activities that are not subject to oversight and approval by the Bureau of Reclamation. Each year the Tribes and Dry Prairie, in accordance with the cooperative agreements, develop a work plan setting out the planning, design and construction activities and the allocation of funding to be utilized on each project feature.

Clearly, the Fort Peck Reservation Rural Water System is well supported by the Bureau of Reclamation. Congress authorized the project with a plan formulated in full cooperation and collaboration with the Bureau of Reclamation, and major project features are under construction with considerable oversight by the Agency.

LOCAL PROJECT SUPPORT

The Fort Peck Tribes have supported the project since 1992 when they conceived it and sought means of improving the quality of life in the region. The planning was a logical step after successful completion of an historic water rights compact with the State of Montana. This compact was the national "ice breaker" that increased the level of confidence by other Tribes in Indian water right settlement initiatives. The Tribes did not seek financial compensation for the settlement of their water rights but expected development of meaningful water projects as now authorized.

The 1999 Montana Legislature approved a funding mechanism from its Treasure State Endowment Program to finance the non-Federal share of project planning and construction. Demonstrating support of Montana for the project, there were only three votes against the statutory funding mechanism in both the full House and Senate. The 2001 through 2005 Montana Legislatures have provided all authorizations and appropriations necessary for the non-Federal cost share.

Dry Prairie support is demonstrated by a financial commitment of all 14 communities within the service area to participate in the project. Rural support is strong, with about 70 percent of area farms and ranches intending to participate as evidenced by their intent fees of $100 per household.

NEED FOR WATER QUALITY IMPROVEMENT

The Fort Peck Indian Reservation was previously designated as an "Enterprise Community", underscoring the level of poverty and need for economic development in the region. The success of economic development within the Reservation will be significantly enhanced by the availability of higher quality, safe and more ample municipal, rural and industrial water supplies that this regional project will bring to the Reservation, made more necessary by an extended drought in the region. Outside the Fort Peck Indian Reservation, the Dry Prairie area has income levels that are higher than within the Reservation but lower than the State average.

The feature of this project that makes it more cost-effective than similar projects is its proximity to the Missouri River. The southern boundary of the Fort Peck Indian Reservation is formed by the Missouri River for a distance of more than 60 miles. Many of the towns in this regional project are located 2 to 3 miles from the river, including Nashua, Frazer, Oswego, Wolf Point, Poplar, Brockton, Culbertson, and Bainville. As shown on the enclosed project map, a transmission system outside the Fort Peck Indian Reservation will deliver water 30 to 40 miles north of the Missouri River. Therefore, the distances from the Missouri River to all points in the main transmission system are shorter than in other projects of this nature in the Northern Plains.

PREPARED STATEMENT OF THE THREE AFFILIATED TRIBES

Our lands were flooded in the early 1950's, over 50 long years ago, with the construction of the Garrison Dam. That dam took from us over 156,000 acres of our best and most fertile land. We lost forever the river bottomlands where our Tribal membership and our Tribal ancestors lived and prospered. In the late 1940's, the Three Affiliated Tribes would have been looking to construct two or three Rural Water Projects on Fort Berthold. With the construction of the dam and a physical barrier of Lake Sakakawea, we are now required to construct six or seven water treatment plants as well as Rural Water Distribution Projects to meet the needs of our Reservation. Our land is geographically and physically split into six separate and distinct areas. Many of our Tribal members still do not have access to safe and abundant drinking water.

Under the Dakota Water Resources Act of 2000 (Public Law 106–554), Congress has charged the Secretary of the Interior with the responsibility to "construct, operate, and maintain" the Fort Berthold Rural Water Supply System. The Three Affiliated Tribes depends on funding appropriated for the purposes under this act to develop water supply systems on the Fort Berthold Reservation. Funding for tribal water construction projects has always been disproportionately lower than funding for other projects in the Garrison Diversion Unit. Over the last 30 years, Congress has appropriated well over $600 million for the Garrison Diversion Unit and less than $30 million of these funds have been expended on all Indian MR&I projects combined.

To address the Fort Berthold Reservation's water supply problems, the Tribes have undertaken the construction of the Fort Berthold Rural Water Supply System. The Fort Berthold Rural Water Supply System currently consists of four separate water treatment facilities and distribution systems with a total of 750,000 linear feet of water mains and the capacity to store 1,000,000 gallons of potable water. The Fort Berthold Rural Water Supply System currently serves 586 households and last year added 30 new households to the system.

With the passage of the Dakota Water Resources Act of 2000, we have begun a process of reevaluation of our critical water needs and an analysis of actions and infrastructure we need to address those needs. Currently we have plans for numerous water supply and water distribution projects that will, when constructed in total, provide a safe and dependable supply of water to the Fort Berthold Indian Reservation. Our plan, when completed, will provide such benefits to all residents of the Reservation, both rural and residential residents, and both Indian and non-Indian alike.

We have carefully considered the opportunities now made available to us. Our infrastructure projects are purposely fragmented and designed so that we may adapt and accommodate both small and large appropriation amounts and so that we can also proceed with multiple projects in any given year. Preliminary estimates of the costs of our identified projects indicate a need for over $95 million. The DWRA has an indexing clause, which reflects the inflation percentage of construction cost on MR&I Water Projects. The amount of indexing for Fort Berthold's component has exceeded the $34 million that is projected, at the end of 2008. To date, we have only received $3.805 million in funding for these water projects. The Tribes have borrowed another $2.5 million towards construction of its water supply projects. When completed in full we anticipate installation of nearly 1,000 miles of pipeline, the construction of nine separate rural water reservoirs and tanks, and a system capacity for service to over 1,500 rural households. The work will also include an upgrade of our four existing water treatment plants and Tribal participation in the water infrastructure development of the various communities of the Reservation.

Those projects identified in our six specific segments include the following:

Four Bears Segment.—We have already installed approximately 17 miles of pipeline and an elevated storage tank at a cost of over $2 million. There is a need to expand the water treatment plant in this segment as this plant is nearing its 200 gallon-per-minute capacity. The total costs to resolve the water needs of this segment, and to assist our McKenzie County neighbors with their critical water needs, are estimated to be approximately $7 million.

North Segment.—We have joined the City of New Town in their efforts in the construction of a new water treatment plant. Our commitment to New Town in this effort is costing approximately $2.5 million. That plant has the capacity to provide water to all users of the segment, including growth within this segment, for the next 40 years. Subsequent projects needed within this area include the construction of a rural water system which will utilize the New Town treatment plant. The total costs to resolve the water needs of this segment are estimated to be approximately $22 million. With the possibility of completing the negotiation with the City of New Town, additional appropriations will be needed to bring this water source into the FBRW. If sufficient water production can't be produced by the city, a separate water treatment plant may be needed to provide potable water to the North and Northeast Segment's Rural Water Lines. An additional $350,000 of O&M funding will be necessary to accommodate the new component to the FBRW System.

Northeast Segment.—There is an immediate need for the installation of approximately 36 miles of pipeline and the construction of a ground level storage tank. The cost for this project is estimated at $2.79 million. Subsequent projects needed within this segment will allow for a continuation of the water line to other rural areas of the segment and will allow us to furnish water to our neighbors of adjacent Mountrail County and the North Central Rural Water Consortium to our Reservation. The total costs to resolve the water needs of this segment, and to assist our

Mountrail County neighbors with their critical water needs, are estimated to be $15 million.

West Segment.—We have already replaced an existing treatment plant intake line. This project cost approximately $1.07 million. Subsequent projects needed within this segment will allow for a construction of a rural water system and an expansion of the existing water treatment plant. The water needs of this segment, and to assist our McKenzie County neighbors, will be addressed with this expansion. The total costs to resolve the water needs of this segment are estimated to be $23 million.

South Segment.—There is an immediate need for the replacement an existing intake line, expansion of the existing water treatment plant and a water storage reservoir. The anticipated cost is approximately $3.3 million. Subsequent projects needed within this segment include the construction of a rural water system and further expansion of the existing water treatment plant. The total costs to resolve the water needs of this segment are estimated to be $12 million.

East Segment.—There is an immediate need for the installation of approximately 48 miles of pipeline. This first effort in this segment is anticipated to cost approximately $1.92 million. Subsequent projects needed within this area will allow a continuation of the water line to other rural areas of the segment, and for a water treatment plant expansion. The total costs to resolve the water needs of this segment are estimated to be $16.59 million.

As you can see, the total funding needed to accommodate the water supply system needs of the Three Affiliated Tribes is in excess of $95 million.

Over the next several years, major construction expenses for the Fort Berthold Rural Water Supply System are expected to peak. A minimum of $12.165 million is needed in fiscal year 2007 to enable the Tribes to construct the next productive stage of the project. The Tribes also require Operation, Maintenance and Replacement ("OM&R") funding for calendar year 2007 of at least $2.5 million. As our water supply systems expand, our operation and maintenance costs increase. We ask that appropriations for these rising OM&R be increased in future years to cover these increasing costs. The Bureau of Reclamation is our funding agency, but they are restricted from requesting sufficient appropriations or budgeting sufficient amounts to cover the increasing cost of operating and maintaining a water system of our design. Currently another governmental agency (OMB) sets target budgeting amounts that USBR must maintain and this doesn't address the amount of appropriation actually needed. Congress needs to get the Office of Management and Budget to make adjustments and to meet the TRUST RESPONSIBILITY OF THE U.S. GOVERNMENT.

Also, the Fort Berthold Rural Water Program currently provides indirect costs to the Three Affiliated Tribes through its Construction and OM&R program funds. The Bureau of Reclamation has PL638 capabilities with Indian Tribes. However, unlike the Bureau of Indian Affairs, Reclamation does not have an indirect cost pool which may be utilized by Tribes. The current indirect cost funds are taken from the direct OM&R line items, which hinders the program. In order to alleviate this, an indirect cost pool should be implemented for USBR for its contracts with Tribes.

Monies which may be provided for our immediate needs only allow us to start the infrastructure development process in each segment. We need to establish a process of continued funding in subsequent years to complete the facilities of each segment in a timely fashion. If we proceed at the present funding rate, it will take us years to complete our projects and construction costs will undoubtedly increase beyond increases in funding. After enduring a wait of 50 years to even begin this process, it is not reasonable to continue to delay the needs addressed by the Act by continuing to fund these projects at unreasonable levels.

We request a favorable review of our request for $12.165 million which will allow a start of construction of the immediately needed facilities within each segment. We believe that, given adequate funding levels in the $15 million to $20 million per year range, we could substantially complete all infrastructure projects within the six Reservation segments in a 4- to 6-year time frame.

PREPARED STATEMENT OF THE OGLALA SIOUX RURAL WATER SUPPLY SYSTEM

MNI WICONI PROJECT (PUBLIC LAW 100–516, AS AMENDED)

FISCAL YEAR 2007 CONSTRUCTION BUDGET REQUEST

The Mni Wiconi Project beneficiaries (as listed below) respectfully request appropriations of $43.032 million for construction as shown below:

	Amount
Oglala Sioux Rural Water Supply System:	
Core	$1,492,000
Pine Ridge (Distribution)	21,405,000
West River/Lyman-Jones Rural Water System	10,534,000
Rosebud Rural Water System	9,601,000
Total	43,032,000

and $9.256 million for operation, maintenance and replacement.

Note that the Lower Brule project will complete construction in fiscal year 2006 and that no funds are requested for fiscal year 2007.

The project sponsors were provided by the 107th Congress (Public Law 107–367) with authority to finish in fiscal year 2008. Three years are needed to conclude our project at the rate requested with completion in fiscal year 2009 (see table below). Completion of the project is achievable in fiscal year 2009 if funded at the rate requested.

	Amount
Total Federal Funding (Oct 2005 Dollars)	$439,927,980
Estimated Federal Spent Through Fiscal Year 2006	$310,832,465
Percent Spent Through Fiscal Year 2006	70.66
Amount Remaining	$129,095,515
Completion Fiscal Year (Statutory Fiscal Year 2008; Public Law 107–367)	2,009
Years to Complete	3
Average Annual Required for Finish	$43,032,000

The administration's fiscal year 2007 budget is $22.914 for construction and $9.256 for OMR. The project is now over 70 percent complete and can be completed in the next 3 years, but the fiscal year 2007 construction budget is highly inadequate and significantly less than the $31 million for construction available to the project before the PART exercise on rural water projects in 2003. The project sponsors strongly urge that the subcommittee appropriate funds to complete the Mni Wiconi Project over the next 3 years. The needs and merits of this project are considerable as described in section 2. The testimony is supplemented by sections 3 through 8.

UNIQUE NEEDS OF THIS PROJECT

This project covers much of the area of western South Dakota that is the Great Sioux Reservation established by the Treaty of 1868. Since the separation of the Reservation in 1889 into smaller more isolated reservations, including Pine Ridge, Rosebud and Lower Brule, relations between the Indian population and the non-Indian settlers on Great Sioux Reservation lands have been improving in successive generations. The Mni Wiconi Project is perhaps the most significant opportunity in more than a century to bring the diverse cultures of the two societies together for a common good. Much progress has been made due to the good faith and genuine efforts of both the Indian and non-Indian sponsors. The project is an historic basis for renewed hope and dignity among the Indian people. It is a basis for substantive improvement in relationships.

Each year our testimony addresses the fact that the project beneficiaries, particularly the three Indian Reservations, have the lowest income levels in the Nation. The health risks to our people from drinking unsafe water are compounded by reductions in health programs. We respectfully submit that our project is unique and that no other project in the Nation has greater human needs. Poverty in our service areas is consistently deeper than elsewhere in the Nation. Health effects of water borne diseases are consistently more prevalent than elsewhere in the Nation, due in part to: (1) lack of adequate water in the home; and, (2) poor water quality where water is available. Higher incidences of impetigo, gastroenteritis, shigellosis, scabies and hepatitis-A are well documented on the Indian reservations of the Mni Wiconi Project area. Progress has been made in the reducing the occurrence of these diseases.

At the beginning of the third millennium one cannot find a region in our Nation in which social and economic conditions are as deplorable. These circumstances are

summarized in Table 1.[1] Mni Wiconi builds the dignity of many, not only through improvement of drinking water, but also through direct employment and increased earnings during planning, construction, operation and maintenance and from economic enterprises supplied with project water. We urge the subcommittee to address the need for creating jobs and improving the quality of life on the Pine Ridge, Lower Brule and Rosebud Indian reservations of the project area.

TABLE 1.—PROFILE OF SELECTED ECONOMIC CHARACTERISTICS: 2000

Indian Reservation/State	2000 Population	Change From 1990 (Percent)	Income		Families Below Poverty (Percent)	Unemployment (Percent)
			Per Capita (Dollars)	Median Household (Dollars)		
Pine Ridge Indian Reservation	15,521	27.07	6,143	20,569	46.3	16.9
Rosebud Indian Reservation	10,469	7.97	7,279	19,046	45.9	20.1
Lower Brule Indian Reservation	1,353	20.48	7,020	21,146	45.3	28.1
State of South Dakota	754,844	8.45	17,562	35,282	9.3	3.0
Nation	281,421,906	13.15	21,587	41,994	9.2	3.7

Employment and earnings among the Indian people of the project area are expected to positively impact the high costs of health-care borne by the United States and the Tribes. Our data suggest clear relationships between income levels and Federal costs for heart disease, cancer and diabetes. During the life of the Mni Wiconi Project, mortality rates among the Indian people in the project area for the three diseases mentioned will cost the United States and the Tribes more than $1 billion beyond the level incurred for these diseases among comparable populations in the non-Indian community within the project area. While this project alone will not raise income levels to a point where the excessive rates of heart disease, cancer and diabetes are significantly diminished, the employment and earnings stemming from the project will, nevertheless, reduce mortality rates and costs of these diseases. Please note that between 1990 and 2000 per capita income on Pine Ridge increased from $3,591 to $6,143, and median household income increased from $11,260 to $20,569, due in large part to this project, albeit not sufficient to bring a larger percentage of families out of poverty (Table 1).

Financial support for the Indian membership has already been subjected to drastic cuts in funding programs through the Indian Health Service and the Bureau of Indian Affairs. This project is a source of strong hope that helps off-set the loss of employment and income in other programs and provide for an improvement in health and welfare. Tribal leaders have seen that Welfare Reform legislation and other budget cuts nationwide have created a crisis for tribal government because tribal members have moved back to the reservations in order to survive.

The Mni Wiconi Project Act provides that the United States will work with us:

". . . the United States has a trust responsibility to ensure that adequate and safe water supplies are available to meet the economic, environmental, water supply and public health needs of the Pine Ridge, Rosebud and Lower Brule Indian Reservations . . . "

Indian support for this project has not come easily because the historical experience of broken commitments to the Indian people by the Federal Government is difficult to overcome. The argument was that there is no reason to trust and that the Sioux Tribes are being used to build the non-Indian segments of the project and the Indian segments would linger to completion. These arguments have been overcome by better planning, an amended authorization and hard fought agreements among the parties. The subcommittee is respectfully requested to take the steps necessary to complete the critical elements of the project proposed for fiscal year 2007.

SUPPLEMENTAL TESTIMONY

OSRWSS CORE PIPELINE REACHES PINE RIDGE INDIAN RESERVATION IN FISCAL YEAR 2006

The Pine Ridge Indian Reservation and parts of West River/Lyman-Jones remain without points of interconnection to the OSRWSS core. The fiscal year 2006 funding

[1] Table 1 was based on census data that understates population and poverty on the reservations and overstates income when compared with Interior sources. The purpose of Table 1 is to compare statistics from a single source between decades, namely the United States Census, but use of the data does not imply acceptance of census statistics by the Tribes.

level will complete the OSRWSS Kadoka to White River pipeline to the northeast corner of the Pine Ridge Indian Reservation where, in combination with the western part of West River/Lyman-Jones, the remaining 50 percent of the design population resides.

OSRWSS will use $1,492,000 in fiscal year 2007 funds to begin construction of the pipeline link between the OSRWSS North core and South core. When completed, this essential pipeline will permit the delivery of water to the Pine Ridge Indian Reservation and parts of West River/Lyman Jones by alternative pipeline routes and will finalize the strategy in the Final Engineering Report to provide reliability in the delivery of a safe and adequate water supply.

Oglala Sioux Tribe supports the funding request of West River/Lyman Jones for fiscal year 2007, which focuses on building the OSRWSS North Core westerly toward Hayes through the West River/Lyman Jones service area. The intent is to complete the OSRWSS North Core and all other OSRWSS core facilities in fiscal year 2008. West River/Lyman Jones is acting as the Tribe's contractor on the OSRWSS North Core.

Nearly half of the Mni Wiconi design population is located on the Pine Ridge Indian Reservation. The fiscal year 2006 work plan and the fiscal year 2007 funding request will make major advances in the completion of the OSRWSS core. Fiscal year 2008 will be the final year to complete the core facilities. Earlier stages of the OSRWSS core facilities have served the Lower Brule Indian Reservation, Rosebud Indian Reservation and eastern regions of West River/Lyman Jones.

Funding for OSRWSS core and distribution facilities is necessary to address health needs and bring economic development to the Pine Ridge Indian Reservation, designated as one of five national rural empowerment zones in the late 1990's. The designation serves to underscore the level of need. Economic development is largely dependent on the timely completion of a water system, which depends on appropriations for this project.

Finally, the subcommittee is respectfully requested to take notice of the fact that fiscal year 2007 will significantly advance construction of facilities that continue our progress toward the end of the project. The subcommittee's past support has brought the project to the point that the end can be seen in fiscal year 2009.

The following sections describe the construction activity in each of the rural water systems.

OGLALA SIOUX RURAL WATER SUPPLY SYSTEM—DISTRIBUTION

With the conclusion of projects completed 5 years ago (2002), the Oglala Sioux Tribe finished all facilities that could be supported from local groundwater. The Tribe, representing nearly 50 percent of the project population will rely on the OSRWSS core to convey Missouri River water to and throughout the Reservation as a primary water source to complement the groundwater source. Much pipeline has been constructed, primarily between Kyle, Porcupine, Manderson and Red Shirt and between Pine Ridge Village and the communities of Oglala and Slim Buttes.

Of critical importance to the Oglala Sioux Tribe is the continuation of the main transmission system from the northeast corner (Highway 73/44 junction) of the Reservation to Kyle in the central part of the Reservation. This transmission line construction has been stalled due to decline in the appropriation levels for Mni Wiconi after fiscal year 2003. The transmission line is needed to interconnect the OSRWSS core system with the distribution system described in the previous section. Groundwater sources with high arsenic and radionuclides need replacement at the earliest possible time to reduce exposure of the population relying on those sources. With completion of the transmission pipeline to Kyle, Missouri River water can be delivered to the existing OSRWSS distribution system constructed between 1994 and 2002. The most populous portions of the Reservation can then be served by the Missouri River water treatment plant for the first time.

This critical segment of the project can be completed to the halfway point in fiscal year 2007. It will require funds in fiscal year 2007 and fiscal year 2008 to complete. The component is urgently needed for the OSRWSS core system to be utilized on the Pine Ridge Indian Reservation and to provide a safe and adequate replacement supply for contaminated groundwater sources.

WEST RIVER/LYMAN-JONES RURAL WATER SYSTEM—DISTRIBUTION

The requested appropriation is part of a 3-year effort directed to serving WR/LJ members between the Mni Wiconi water treatment plant at Ft. Pierre and the City of Philip, a distance of approximately 70 pipeline miles. Funds received in fiscal year 2007 will be used for construction of the North Core pipeline and distribution lines to service areas adjacent to the core pipeline.

The North Core pipeline serves as the primary water source for half of the WR/LJ membership, most of which is now served by water sources that do not meet SDWA standards or by interim sources of very limited capacity and reliability. The North Core pipeline additionally provides a limited capacity alternate source to the South Core pipeline serving the Oglala Sioux Tribe.

Distribution pipelines in the Four Corners to Philip Junction service area meets the domestic and livestock needs of the rural area and the municipal needs of the Town of Midland. Recent membership surveys from that area indicate that most of the residents haul their domestic water and half of the ranchers also haul water for their livestock. This area is in desperate need of a reliable supply of quality water.

ROSEBUD RURAL WATER SYSTEM (SICANGU MNI WICONI)

As in past years, Rosebud's work plan focuses on bringing high quality water to more people and improving critical infrastructure on the Rosebud Reservation. The Tribe accomplishes this through the wise use of project funds and working with other agencies and entities to obtain the maximum value from available funds.

The East Todd project provides quality water to an area of Todd County that is suffering from increasing nitrate concentrations in the limited groundwater available in the area. This project was initiated in 2006 and will be completed in 2007. This project includes more miles of pipeline than any other in the Rosebud system and by bidding it as one project the unit costs for pipelines are reduced.

The Old Rosebud Improvements are being designed in 2006 and will be constructed in 2007. This project focuses on the replacement of older corroded metallic pipelines and undersized pipelines. The replacement pipelines will be able to meet critical demands in the center of government for the Rosebud Sioux Tribe. The timing of construction of this project is being coordinated with the Bureau of Indian Affairs. The Bureau of Indian Affairs is funding the replacement of the older paved streets in the community and construction of pipelines will coincide with street construction. This cooperative approach reduces the cost of pipeline construction because the cost of pavement demolition and replacement is eliminated as a Mni Wiconi Project cost. The cooperative approach also protects the investment in the streets and pipes because the new pavement will not have to be disturbed for the replacement or repair of the water mains.

The Todd County Reservoirs project provides additional storage for the Todd County portion of the Sicangu Mni Wiconi. Two similar reservoirs are being combined into one bidding package as a means of reducing the cost of the work. The eastern reservoir provides storage for the East Todd project area and the other will replace the corroded steel reservoir that supplies the town of Mission. The replacement of the Mission reservoir is integral to the Mission Area Improvements.

The Mission Area Improvements address all facets of this older municipal system that was transferred to the United States in trust for the Tribe in 2002. The improvements address the deficiencies identified in the transfer agreement and other aspects of the system. For example, one of the low-yielding wells will be replaced and chlorination and storage will be provided at the wellfield rather than 7 miles further north near the town of Mission. This will provide treated water to the residents along the pipeline route. The pipeline route is adjacent to U.S. Highway 83 and is in one of the more rapidly growing areas on the reservation.

The Two Strike North project fills in the gap north of Two Strike and south of Rosebud where there is currently no service. Because of proximity to two of the larger reservation communities, this is also a rapidly expanding area.

The Service Lines and Connections project is an ongoing effort to provide existing and new homes with high-quality water from the Sicangu Mni Wiconi. It also provides for livestock water connections as well. This work is done by tribal crews and provides direct employment benefits as well as quality water to reservation residents. In addition to the construction work, the tribal crew is now utilizing global positioning system (GPS) equipment in the layout of the facilities and preparation of the record drawings. This skill can be used by both the individual tribal members and the Tribe as a whole in other endeavors after the construction of Mni Wiconi is completed. This is just one more example of the Tribe obtaining additional value from Mni Wiconi Project funds.

LOWER BRULE RURAL WATER SYSTEM—DISTRIBUTION

The Lower Brule Rural Water System (LBRWS) has gained the support of the other sponsors to complete its share of the project with funds appropriated in the fiscal year 2006 budget. The vast majority of the funds necessary to complete the LBRWS were provided in the fiscal year 2005 budget. LBRWS will only be receiving

$440,000 from the fiscal year 2006 budget to fully complete its system. The result of completing the funding for the LBRWS is a savings of $1.5 million to the project as a whole.

With the funds received in fiscal year 2006, LBRWS will complete the replacement of some water lines that were installed previous to this project and that have become undersized.

The LBRWS would like to take this opportunity to thank the other sponsors for their cooperation and support in completing the funding of the LBRWS in this manner and Congress, especially the South Dakota delegation past and present, for their continued support of this truly needed project. It should be noted, however, that this will not end LBRWS's involvement in the project. LBRWS will continue to work with and support the other sponsors in seeing the entire project come to fruition.

OPERATION, MAINTENANCE AND REPLACEMENT BUDGET

The sponsors have and will continue to work with Reclamation to ensure that their budgets are adequate to properly operate, maintain and replace (OMR) respective portions of the overall system. The sponsors will also continue to manage OMR expenses in a manner ensuring that the limited funds can best be balanced between construction and OMR.

The project has been treating and delivering more water over the last 3 years from the OSRWSS Water Treatment Plant near Fort Pierre. Completion of significant core and distribution pipelines has resulted in more deliveries to more communities and rural users. The need for sufficient funds to properly operate and maintain the functioning system throughout the project has grown as the project has now reached 71 percent completion. The OMR budget must continue to be adequate to keep pace with the system that is placed in operation.

The Mni Wiconi Project tribal beneficiaries (as listed below) respectfully request appropriations for OMR fiscal year 2006 in the amount of $9,256,000 as requested in the fiscal year 2007 budget:

	Amount
Oglala Sioux Rural Water Supply System:	
Water Treatment Plant and Core Pipeline	$2,073,000
Pine Ridge Distribution	2,400,000
Rosebud Rural Water System	2,200,000
Lower Brule Rural Water System	1,400,000
Reclamation Oversight	1,183,000
Total	9,256,000

Be assured that water conservation is an integral part of the OMR of the project. Water conservation not only provides immediate savings from reduced water use and the need for extra production, it also extends the useful life and capacity of the system.

PREPARED STATEMENT OF THE WESTERN COALITION OF ARID STATES

FISCAL YEAR 2007 BUREAU OF RECLAMATION & DEPARTMENT OF ENERGY BUDGET

The Western Coalition of Arid States (WESTCAS) is writing in support of the following multi-State Federal programs, in priority order, under the Bureau of Reclamation and Department of Energy's budgets that we believe are deserving of your subcommittee's support during the fiscal year 2007 budget process:

—Colorado River Front Work and Levee System, Water Management Reservoir Near the All American Canal Subactivity—$37.4 million;
—Yuma Area Projects, Excavating Sediments Behind Laguna Dam—$3.5 million;
—Water Reclamation/Reuse Title XVI—$30 million;
—Water 2025—$14.5 million;
—Science and Technology—$8.5 million;
—Atlas Mill Tailings Removal in Moab, Utah—$22.8 million.

WESTCAS is a coalition of Western towns and municipalities, water and wastewater agencies, irrigation districts, Native American nations, companies with water and wastewater concerns and professionals in the fields of engineering, the environmental sciences, and natural resources law and policy. WESTCAS was formed in 1992 by Western water and wastewater agencies concerned with the quality and management of water resources in the Arid West. A grass roots organization,

WESTCAS is dedicated to encouraging the development of water programs and regulations which assure adequate supplies of high quality water for those living in the arid regions while protecting the environment.

COLORADO RIVER FRONT WORK AND LEVEE SYSTEM

Water Management Reservoir near the All-American Canal Subactivity

Reclamation is completing a multi-phased study quantifying the need and options for regulatory storage to improve Colorado River management downstream of Lake Mead.

Reclamation has concluded that locating up to a 10,000 acre-foot capacity water management reservoir near the All-American Canal near Drop 2, 15 miles east of the Imperial Valley would significantly improve the flexibility of the Lower Colorado System. The reservoir's location would be of great benefit to the Colorado River Basin States. Benefits that include:

—conservation of reservoir system storage;
—improving river regulation and water delivery scheduling;
—providing opportunities for water conservation;
—storage and conjunctive use programs;
—and setting the stage for new cooperative water supply and water quality management endeavors with Mexico.

Reclamation funding of $37.4 million is needed in fiscal year 2007 in order to obtain permits, acquire land, clear and prepare the site, design the reservoir and its inlet and outlet canals, and procure materials for construction.

This is one of four distinct subactivities to be undertaken in 2007 under the Water and Energy Management and Development Activity of the Colorado River Front Work and Levee System Project.

The President's fiscal year 2007 request for this activity is $5.5 million. WESTCAS requests that Reclamation's funding for the Water Management Reservoir near the All American Canal subactivity are augmented so as to provide $37.4 million for this work to progress sufficiently.

Yuma Area Projects, Excavating Sediments Behind Laguna Dam

While work on a reservoir near the All-American Canal proceeds, there is an immediate need to restore limited Colorado River regulatory storage capacity downstream of Parker Dam. This can be partly accomplished by excavating sediments that have accumulated behind Laguna Dam since its completion in 1909. Reclamation funding of $3.5 million is needed in fiscal year 2007 to complete environmental compliance and procurement and begin dredging behind Laguna Dam.

This subactivity under the Yuma Area Projects, Facilities Maintenance and Rehabilitation activity would restore 1,100 acre-feet of storage behind Laguna Dam. Not only would this enhance the ability to regulate flows arriving at Imperial Dam, it would capture and re-regulate the water periodically released for the proper operation of Imperial Dam, benefiting both the Colorado River Basin States and Mexico.

WESTCAS requests that Reclamation's funding for sediment control be augmented so as to provide $3.5 million for the work to excavate sediments from behind Laguna Dam.

The construction of a new regulating reservoir, and dredging sediments behind an existing dam will critically improve water delivery efficiencies and prevent the loss of up to 200,000 acre-feet per year from Colorado River reservoir storage.

WATER RECLAMATION/REUSE TITLE XVI

Projects funded under Title XVI of the Reclamation Projects Authorization and Adjustment Act of 1992 (Public Law 102–575) and the Reclamation Recycling and Water Conservation Act of 1996 (Public Law 104–266) will greatly enhance the Arid West's water supply reliability and the environment through effective water recycling and recovery of contaminated groundwater. Funding in the fiscal year 2007 budget for previously unfunded projects, as well as the continued support for previously funded projects, is essential to realizing regional water supply reliability. The Bureau of Reclamation's budget request for research into the technologies and science of water recycling is another vital step toward making water reuse a viable alternative for communities faced with limited water supplies. WESTCAS urges your full support for increasing the Title XVI funding to $30 million.

WATER 2025

Implementation of Water 2025 includes water system optimization reviews that will assess the potential for water management improvements, financial assistance for irrigation and water districts in creating water markets and facilitating more ef-

ficient use of existing water supplies through water conservation, efficiency, and marketing projects. WESTCAS recommends your support of a Reclamation fiscal year 2007 budget that includes $14.5 million in funding for the Water 2025 Program.

SCIENCE AND TECHNOLOGY

As the "Voice of Water Quality in the Arid West," WESTCAS advocates wise use of water resources by promoting scientifically-sound laws, regulations, funding, and policies that protect public health and the environment in the arid West. WESTCAS is dedicated to the use of sound science in the promulgation of rules and regulations, and supports funding for water quality research, in particular. The Science and Technology Program uses funds for the development of new solutions and technologies that respond to the Bureau's mission-related needs in this area. WESTCAS strongly recommends your support of a Reclamation fiscal year 2007 budget that includes $8,500,000 in funding for the Science and Technology Program.

ATLAS MINE TAILINGS CLEANUP

In cooperation with the Utah State Environmental Quality Department, WESTCAS supports the President's budget request of $22.8 million in fiscal year 2007 for the purposes of moving forward with the clean-up of uranium mine tailings at the Atlas Site in Moab, Utah. WESTCAS supports the Governor of Utah's position that these mine tailings must be removed from their dangerously close proximity to the Colorado River and advocates removal as the only acceptable solution to this issue.

Thank you for considering our request.

DEPARTMENT OF ENERGY

PREPARED STATEMENT OF THE BUREAU OF ECONOMIC GEOLOGY, THE UNIVERSITY OF TEXAS AT AUSTIN

This testimony addresses: (1) the fiscal year 2007 Energy and Water Development Appropriations bill regarding funding for oil and natural gas R&D; and (2) the Domestic Energy Production through Offshore Exploration and Equitable Treatment of State Holdings Act of 2006 (proposed by Representative Jindal as H.R. 4761).

The bottom line: Eliminating Federal investment in oil and gas R&D and mining programs is destroying the ability of U.S. universities to train science and engineering students in energy- and mining-related fields and significantly damaging independent oil and natural gas producers, who are responsible for 90 percent of the wells drilled in the United States. Contrary to a few decades ago, today, in terms of U.S. oil and natural gas R&D investment, the major international oil companies play a very limited role, do not benefit greatly from Federal oil and gas R&D, and should therefore have limited-to-no voice in U.S. R&D policy. The Office of Management and Budget does not appear to understand these realities. The slow erosion of the already paltry oil and gas R&D budget creates an instability that is destructive to the program, and ultimately harmful to the energy future of the United States. Congress must act to halt the annual OMB proposal to eliminate Federal oil and gas R&D.

Budget cuts to the U.S. Department of Energy's Fossil Energy Research and Development program have severely limited the amount of research being conducted to promote a smooth transition to a natural gas, cleaner energy economy. To get to tomorrow's energy future, we must meet today's energy demand. Ironically, that means greater investment in oil, natural gas, and coal, which make up more than 85 percent of U.S. energy consumption, with oil and natural gas representing 60 percent, so that the bridge to the future is stable.

There is an overwhelming consensus that oil and natural gas will continue to dominate the Nation's energy mix for decades to come. No matter how attractive the potential of alternative energy sources may appear today, none is seen as a viable alternative to meet the broad needs of American consumers before the midpoint of the century. Fossil fuels, led by oil and gas, will continue to account for the vast bulk of U.S. energy consumption for the near future.

DOE's latest forecast projects a 35 percent increase in U.S. energy demand to 2025. Fossil energy's share of that demand is expected to be stable or even increase slightly. Oil and natural gas are predicted to gain market share in that time, and DOE just ratcheted up its forecast for oil and gas prices in that period.

The gap between domestic conventional oil supply and demand will persist. In 2025, net imports of crude oil and refined products are forecast to reach 68 percent of U.S. petroleum consumption. Natural gas is following the same trend, with natural gas imports forecast to rise to 30 percent, up from 16 percent. In addition, America's trade deficit is at a record high, largely owing to soaring oil imports.

The easy (conventional) oil and gas are largely discovered. The future demand must be met by more complex and unconventional resources. Only research can bring the advances needed in technology to achieve the increased efficiency that makes yesterday's untapped resources economical to produce today. Yet, despite ever-increasing demands on energy supply, both domestically and globally, the number of trained scientists and engineers specializing in energy-related fields continues to decline. This is not true of our friends in the Far East, where enrollments in science and engineering programs continue to increase, and dwarf those in the United States.

Besides the crisis of diminishing research and development (R&D) capability and a declining workforce to address growing energy and talent needs, coastal States disproportionately and inequitably bear the cost of maintaining an infrastructure to develop energy resources without replenishment of funds.

H.R. 4761 would provide incentive for coastal States to strengthen educational programs that will train the next generation of scientists and engineers entrusted with our national energy production needs. At the same time, it will promote environmental accountability and restoration at the State level, where the benefits are greatest—right in the States' own "backyard." Renewed investment in energy R&D will stimulate a response to the call to discover more economically efficient means to supply our Nation's energy needs, both now and in the future.

The revenues returned to the States involved in oil shale and tar sands production through H.R. 4761 would promote the development of the infrastructure needed to realize this significant component of our unconventional natural gas resources. The United States has the opportunity to tap into this major resource that has not yet been globally exploited. Potential resources include such "exotic" sources as very deep gas (15,000 to 30,000 feet), natural gas below salt formations, natural gas disseminated in saltwater brines, and methane hydrates.

The United States has less than a tenth of Saudi Arabia's 240 billion barrels of estimated proved oil reserves, but it holds the bulk of the world's oil shale resource—at more than 2 trillion barrels—and its tar sands resource is pegged at more than 76 billion barrels.

Natural gas resources traditionally thought of as "unconventional" now account for the fastest growing segment of our natural gas supply: coalbed natural gas (CBNG), low-permeability ("tight") formations, and deep gas. In addition, the U.S. Geological Survey has estimated that deposits of methane hydrates probably hold 200,000 trillion cubic feet (Tcf) of natural gas in place within the U.S. Exclusive Economic Zone alone. Admittedly, this estimate is poorly constrained, but even if it were two orders of magnitude too high, it would still represent nearly a 100-year U.S. supply. Although economic recoverability of these vast deepwater accumulations has not yet been demonstrated, technical recoverability has been established through Arctic field tests. As with shale gas, coalbed methane, and tight gas, economic production of methane hydrates is perhaps only a matter of significant investment and new talent.

The key to realizing the potential of these resources is technological innovation. Despite today's high oil and gas prices, America's private sector, largely composed of smaller to mid-sized independent producers, is ill equipped to undertake the R&D needed to yield such innovations. The oil price collapses of the early 1980's and late 1990's decimated the research departments of the major U.S. oil companies. Small, independent producers (average company size: 12 employees) drill almost 90 percent of the wells in the United States and produce 60 percent of the Nation's natural gas and 40 percent of its oil. Yet these small companies have virtually no R&D capabilities.

The Federal Government has an important role to play in spurring the advanced technologies needed to recover domestic resources. Developing these new technologies for domestic use will entail risky, long-term R&D that the private sector has not undertaken on its own.

The Federal Government has already made a huge impact on U.S. oil and gas technology. Game-changing technology initiatives—such as carbon dioxide enhanced oil recovery (CO_2 EOR, which also provides an opportunity for CO_2 sequestration), CBNG, and tight gas—have emerged from DOE-sponsored oil and gas research programs. New technology paradigms, such as the Microhole and Deep Trek initiatives, are on the brink of commercialization and widespread acceptance by America's oil and gas industry.

At the same time, DOE's Oil and Natural Gas Environmental Solutions program offers an opportunity to access and recover, in an environmentally responsible manner, the 320 Tcf of gas and 22.2 billion barrels of oil that underlie Federal lands. Here, DOE serves a critical role as the "honest broker" in reconciling the Nation's conflicting but equally important energy and environmental needs.

The costs of not investing in America's energy future are great. Lack of Federal support of oil and natural gas R&D could have several negative effects:

—Compromise ongoing efforts to ensure the sustainability and reliability of the Nation's energy infrastructure.

—Contribute to the trends of ever-rising energy imports and persistently high oil and gas prices.

—Cost the U.S. Treasury hundreds of billions of dollars in foregone royalties, lease payments, taxes, and related economic ripple effects.

Another problem vital to national security is maintaining an adequate supply of mineral resources and trained professionals to find and develop these resources. In a recent article investigating the shortage of mining engineers, Peter Knights found that the supply of mining engineers from five countries that have a strong mining presence, the United States among them, decreased 25 percent from 2000 to 2002. Moreover, when commodity prices are high and demand peaks, competition for this scare talent likewise peaks. During down cycles, graduates tend to move to other industry sectors, further exacerbating the problem. Knights found further that while university mining programs in the United States are being cut, enrollments in existing programs are declining.

A study of active, dormant, and recently closed programs related to economic geology in U.S. higher education institutions shows 7 programs closed within the last 5 years, leaving only 39 active institutions and 22 "dormant" institutions. Even many of the active institutions were found to lack funding to focus research on areas related to mineral resources. If programs at top-ranked schools like Stanford and Harvard are closing, and "active" programs are compromised by funding shortages, how will the United States populate a trained workforce to meet future needs?

A task force formed in 2004 by the Society for Mining, Metallurgy, and Exploration (SME)—an international professional society of more than 11,500 members from the minerals industry in nearly 100 countries—has focused attention on the critical issue of the shortage of mining engineers. Preliminary findings are that U.S. enrollment in mining engineering programs may need to be tripled to meet expected demand. Retiring faculty are creating another gap in the supply of trained professionals. SME estimates that as much as $20 million per year of additional funds will be needed to sustain educational programs to meet the U.S. demand for mining engineers.

Funds from H.R. 4761 channeled into a Federal Energy and Mineral Resources Professional Development Fund would help sustain mining and petroleum schools and encourage growth of this important field.

The American Geological Institute (AGI), which has tracked enrollments in the geosciences since 1952, in its 2001 Report on the Status of U.S. Academic Geoscience Departments (http://www.agiweb.org/career/rsad2001.pdf) showed a 66.8 percent decline in geoscience enrollments from 1983 to 2000. AGI attributed the peak enrollment levels from 1965 to 1983 to growth in the petroleum sector.

But funding in support of research declined in all categories—private foundations, State, industry, other, and Federal—from 1999 to 2001. During that same period, AGI found the percentages of funding support also changed. More than 70 percent of funding came from Federal sources, which declined in total dollar amounts by more than 50 percent in that short time. That is, greater dependence on Federal funds accompanied drastically reduced research budget support. As in the mining industry, AGI also found an aging workforce in the geosciences that is not being replenished by new talent to meet anticipated needs.

Clearly, it is in the best interests of the United States for its institutions of higher education to have support and incentive to grow their programs to train geoscience and engineering professionals to sustain the supply of energy and mineral resources necessary to maintain a healthy U.S. economy.

Terminating the DOE's natural gas and oil research programs could deal a crippling blow to America's energy future. Today marks an unprecedented opportunity to reverse that trend. America has massive untapped hydrocarbon resources, whose ultimate combined energy potential outstrips that of any other country. And we are on the cusp of the technological innovations needed to realize that untapped potential.

America is the birthplace of the oil and gas industry and has long been the leader in oil and gas technology. But it also has the world's most mature oil and gas industry—and it still needs a technology pipeline not only to sustain it but also to let

it fulfill its potential and thus deliver all the benefits that the Nation can receive from that effort. It also needs a commitment to supporting a trained workforce to achieve national energy, environmental, and mineral extraction goals. Without Federal funding to spur technology innovations and attract new professionals to the industry, America will relinquish its leadership role—a trend that would be difficult to reverse.

PREPARED STATEMENT OF ANTHONY R. KOVSCEK

I write in regard to budget requests and appropriations for Oil and Natural Gas Technology within the Department of Energy. Specifically, I assert that zeroing out and shutting down DOE's oil and gas research and development efforts at this time is both short-sighted and not in the national interest. At the very least, I believe that you should maintain spending at fiscal year 2006 levels: $32.7 million for natural gas R&D and $31.7 million for oil R&D. Given the high prices of gasoline at the pump and natural gas at the residential meter, it is in the national interest to increase funding for Oil and Natural Gas Technology as well as increase funding for the development of other energy resources such as geothermal.

Full, consistent, steady funding of energy R&D efforts and especially for oil and natural gas production is essential to meet the energy challenge of the future. This research effort needs to continue in conjunction with the DOE laboratories, universities, and the private sector. Continuing effort is critical in the areas of unconventional resources that include: heavy oil, oil shale, fractured low permeability reservoirs, tight-gas sands, coalbed methane, and methane hydrates.

You may ask what will be lost without Federal funding? The answer has many different facets. First, the government and the public, loses entirely its ability to have research conducted in the above unconventional resources that are becoming increasingly important on the national and international stage. The Nation loses its voice to determine research directions and influence outcomes. Second, we lose energy-critical programs. For example:

—microhole technology to drill smaller diameter wells into deep resources;
—demonstration programs that reduce risk to early adopters and prove environmental conformance;
—research across the spectrum of oil and gas exploration and production technologies;
—advanced recovery concepts that allow the conversion of oil and gas resources into producible reserves;
—programs that benefit independent producers who do not have in-house research and technology development efforts nor access to such efforts;
—the Petroleum Technology Transfer Council that provides critical technology transfer services.

I have been told that oil and natural gas technology programs within DOE have been rated as "ineffective" and that this is a major piece of evidence cited for zeroing out these programs. I find this rating to be counter to what I hear from the energy industry. Let me cite three representative success stories that counter directly the above rating:

—DOE Fossil Energy through Oil and Natural Gas Technology programs has supported various institutions to study aspects of "interfacial phenomena" related to petroleum recovery. Three institutions that come to mind that received such support are the Petroleum Recovery Research Center in New Mexico, the University of Wyoming, and Lawrence Berkeley National Laboratory. While much of this work was quite fundamental, one conclusion reached is that the composition of fluids injected into oil reservoirs can have a marked effect on oil recovery. While not receiving extensive public fanfare, this work has been followed for a number of years by industry and is now the subject of extensive reservoir conditions testing in company laboratories and field pilot tests. Results look very promising and major capital investment in desalinization plants on the Alaska North Slope are being planned. The process now referred to within the industry as LoSal flooding has the potential to increase oil production by more than 1 billion barrels on the North Slope alone. Once proven successful, I predict that many independents will pick up this technology.
—There are extensive "diatomaceous" or "diatomite" reservoirs in California that are very tight, fractured, and consequently difficult to produce. These are so-called unconventional resources as discussed above. Cumulatively, these reservoirs hold from 12 to 18 billion barrels of oil. This is a size that is on-par with the initial estimates for the oil in place at Prudhoe Bay, Alaska. Again, DOE Fossil Energy through Oil and Natural Gas Technology programs supported re-

search that looked into various aspects of production from these diatomaceous reservoirs. Three institutions that come to mind are Lawrence Berkeley National Laboratory, Los Alamos National Laboratory, and Stanford University. They studied well stimulation methods, ground subsidence, and advanced recovery techniques for diatomite. While specific production figures per company are difficult to come by, it is well known that Aera Energy produces oil from the South Belridge Diatomite Reservoir, Chevron produces oil from the Lost Hills and Cymric Diatomite Reservoirs, and Berry Petroleum produces from the Midway Sunset Diatomite Reservoir. This names only a few that I could identify easily. The California Division of Oil, Gas, and Geothermal Resources confirms December 2005 production of about 63,760 bbl/day from diatomite reservoirs at South Belridge, 32,600 bbl/day from diatomite reservoirs at Lost Hills, and 23,000 bbl/day from diatomite/siliceous shale intervals at Cymric. A more careful accounting surely would increase the total production attributed to California diatomite.

—The last area is enhanced oil recovery and I will cite specifically investment in R&D efforts aimed at thermal recovery that date to the late 1970's and continue through the present. This is mainly pointed at heavy-oil production. These are oils that are very thick and viscous at reservoir temperature and, hence, do not flow well under primary or water injection conditions. The resource base of heavy oil within the United States is significant and in the neighborhood of 200 billion barrels of oil. At current consumption rates, this resource represents about 45 years of total oil supply for the United States. Many institutions have participated in research to unlock these resources using the thermal technologies of steam injection, hot water flooding, and in situ combustion. These institutions include the University of Southern California, Stanford University, and Lawrence Berkeley National Laboratory, among others. According to the Oil and Gas Journal's biennial survey, production from these technologies averaged 345,000 bbl/day in 2004.

These figures alone make the case that the small investment made by the DOE through Oil and Gas Technology R&D have paid out. Stories such as those above convince me that funding needs to be maintained and actually increased to ensure adequate production of important domestic resources.

PREPARED STATEMENT OF CUMMINS INC.

Cummins Inc. is pleased to provide the following statement for the record regarding the Department of Energy's fiscal year 2007 budget for Energy Efficiency and Renewable Energy; Electricity Delivery and Energy Reliability; and Fossil Energy programs. Cummins Inc., headquartered in Columbus, Indiana, is a corporation of complementary business units that design, manufacture, distribute and service engines and related technologies, including fuel systems, controls, air handling, filtration, emission solutions and electrical power generation systems. The funding requests outlined below are critically important to Cummins' research and development efforts, and would also represent a sound Federal investment towards a cleaner environment and improved energy efficiency for our Nation. We request that the committee fund the programs as identified below.

ENERGY EFFICIENCY AND RENEWABLE ENERGY

Office of FreedomCAR and Vehicle Technologies/Vehicle Technologies

Advanced Combustion Engine R&D—Heavy Truck Engine.—This program is critical to the success of engine manufacturers achieving energy efficiency enhancements while meeting EPA's near zero 2010 emissions regulations. Heavy truck engines consume nearly 25 percent of all surface transportation fuels used in the United States. Technologies required to achieve EPA 2007 & 2010 emissions (90 percent reduction in 2007 and near zero emissions in 2010) are likely to decrease fuel efficiency. This program supports R&D to increase on-highway engine fuel efficiency while meeting future emissions regulations. The objective of this program is to demonstrate 50 percent engine system efficiency, an increase from an efficiency baseline of approximately 40 percent. To date, 45 percent engine efficiency has been demonstrated at 2007 emissions levels. Research is ongoing on advanced combustion technologies—homogeneous charge, low temperature and mixed mode combustion—which are capable of near zero levels of NOx and PM engine out emissions. However, additional research is needed to develop low temperature combustion recipes for all engine conditions and provide overall engine control and power capabilities for market acceptance. Planned research areas include simulation/modeling techniques, improved fuel injection systems, technology validation on single cylinder en-

gines and controls development. Other major categories of work involve vehicle system integration, sulfur management and robust particulate filters. Cummins urges that $20 million be appropriated for this program in fiscal year 2007.

Advanced Combustion Engine R&D—Waste Heat Recovery.—This DOE program supports broader energy efficiency improvement and emissions goals for diesel engines by developing technologies for waste heat recovery and engine boosting. Nearly 60 percent of fuel energy is lost in diesel engines through wasted heat in exhaust, lubricants or coolants. This program is focused on identifying and developing innovative energy recovery technologies, such as thermoelectric, turbo-compounding and Rankine cycle technologies. Cummins has evaluated a Rankine cycle concept which recovers waste heat from charge air and EGR gas streams, and converts it into electricity. This electrical energy is expected to supplement engine power output. Planned activities in fiscal year 2007 include subsystem design, development and testing in a laboratory, and system integration in a vehicle. The funding increase will adequately fund recent DOE industry R&D funding awards in this area. Cummins urges that $5.6 million be appropriated for this program in fiscal year 2007.

Advanced Combustion Engine R&D—Combustion and Emission Control R&D.—This program is critically important to the heavy-duty diesel engine company efforts to meet stringent emissions requirements in the future through better understanding of combustion technologies and properties. The research focus for this program is to develop advanced combustion regimes (HCCI & LTC) for light duty & heavy duty engine applications. A funding split under the program between the 21st Century Truck Partnership (21CTP) and the FreedomCAR partnership is recommended as follows: 21CTP—$7.0 million (an increase of $3.32 million); FreedomCAR Partnership—$17.9 million. The 21CTP increase is recommended to support CRADA activities at the Department of Energy's national laboratories for broad research and development of advanced combustion systems to improved engine-out emissions and fuel efficiency. The increase will allow DOE to adequately support recent industry awards for High Efficiency Clean Combustion research funded under this initiative. Cummins urges that $24.9 million be appropriated for this program in fiscal year 2007. A funding split under the program between the 21 Century Truck Partnership (21CTP) and the FreedomCAR Partnership is recommended as follows: 21CTP—$7.0 million and FreedomCAR—$17.9 million.

Advanced Combustion Engine R&D—Off-Highway Heavy Vehicle Engine R&D.—The off-highway engine program supports R&D efforts to minimize fuel economy penalties while meeting EPA Tier IV emissions requirements starting in 2008. Without major technological efforts, emission recipes will cause a significant increase in fuel use. While some technologies developed for on-road engines can be applied to off-road engines, manufacturers face unique off-road challenges, including the lack of cooling air flow to the engines, severe conditions of dust, debris, a wide range of altitude, temperature and vibrations. Off-road engines are applied to hundreds of different types of equipment in a wide range of industries, such as agriculture, construction and mining. The restricted space for accessories and engine components significantly limits emission compliance strategies. These unique requirements necessitate the development of new technologies to meet the demand of off-highway equipment. Progress has been made in developing combustion models to achieve in-cylinder emissions solutions. These have mitigated the fuel economy penalty for Tier III emissions engine designs. Continued funding of this initiative in 2007 is critical to achieving lower fuel consumption, system robustness and lower cost for Tier IV architectures. Cummins urges that $3.5 million be appropriated for this program in fiscal year 2007.

Advanced Combustion Engines—Health Impacts.—The objective of this program is to expand the knowledge base relating to the heath implications of emissions technologies being developed to meet energy efficiency goals. The Advanced Collaborative Emissions Study (ACES) is funded under this program. ACES is a cooperative effort between government (DOE, EPA) and industry (EMA, MECA, API) to assess health effects of emissions from 2007 compliant heavy-duty engines. The ACES program will include emissions characterization, chronic exposure animal bioassays, and identification of any unanticipated emissions or health effects from new engine technologies. Continuous monitoring of air toxics and source apportionment techniques are also proposed. Cummins urges that $2.5 million be appropriated for this program in fiscal year 2007.

Office of FreedomCAR and Vehicle Technologies/Fuels Technologies

Non-Petroleum Based Fuels & Lubes: Heavy and Medium Duty Truck Programs (Natural Gas Vehicle).—This program funds development efforts for biomass and synthetic fuels as blending agents and natural gas engines for medium and heavy

trucks. The increase is requested to develop efficient techniques to remove water from biodiesel and No. 2 diesel fuel blends and complete ongoing natural gas engine development activities. Biodiesel fuel blends are becoming acceptable in the market place. Current fuel filters are less effective for separating emulsified water in such blends and are likely to cause problems in the field. Next generation natural gas combustion technologies can meet 2010 emissions, with simpler and more durable systems, and reduce fuel efficiency losses compared to diesel engines. Natural gas engines are practical in urban applications including school and city buses, and could significantly reduce exhaust emissions. Natural gas combustion, storage and infrastructure development also offers a bridge to the hydrogen economy. Cummins urges that $8 million be appropriated for this program in fiscal year 2007.

Advanced Petroleum Based Fuels (APBF).—This important program supports the study of fuel properties that can enable engines to operate in the most efficient mode while meeting future emission standards. This activity is cross-cutting with the Advanced Combustion Engine program. The modeling and experimentation activities under this effort will include expertise and shared resources between DOE, engine manufacturers and energy companies. Engine companies are required to prove emissions compliance for over 435,000 miles of useful engine life. The goal of this program is also to study the impacts of fuel and lube oil sulfur content on durability and reliability of particulate aftertreatment systems. Cummins urges that $4.5 million be appropriated for this program in fiscal year 2007.

Office of FreedomCAR and Vehicle Technologies/Materials Technologies

Propulsion Materials Technology—Heavy Vehicle Propulsion Materials Program.—This program supports research and development of next generation materials to enable diesel engine efficiency improvement, improved reliability and reduced aftertreatment system costs. Traditional engine materials may not be adequate for the next generation of advanced combustion concepts, such as Homogeneous Charge Compression Ignition (HCCI). High injection fuel systems are needed to support these technologies. Smaller clearances in the fuel system require new capabilities to remove submicron particles from the fuel. Aftertreatment NOx reduction technologies are not fully developed and particulate filters will be implemented in a large scale for the first time in 2007. These efforts may require further technology enhancements—lighter weight and higher strength materials are needed to obtain lighter, more robust and higher cylinder pressure engine systems for improvements in fuel consumption. Increased funding will support studies on a range of advanced materials technologies, including lightweight high strength engine components, composites, catalysts and soot oxidation, filtration media modeling and nano-fiber filter technologies. Cummins urges that $5.9 million be appropriated for this program in fiscal year 2007.

Office of Hydrogen Technologies/Hydrogen Technologies

Transportation Fuel Cell Systems.—The program supports R&D and system integration of energy efficient auxiliary power unit technologies for mobile or off-road applications. The goal of this effort is to demonstrate a SOFC-based auxiliary power unit (APU) for Class 7/8 on-highway diesel trucks. Reduction of idling fuel consumption is widely recognized as an important element in reducing exhaust emissions from heavy trucks. It would also reduce our overall dependence on foreign oil. It is estimated that a reduction of up to 800 million gallons of diesel fuel is possible if SOFC systems can provide the hotel loads of truck fleets. In 2005, Cummins Power Generation and our partner, International Truck and Engine Company, conducted analysis and design work to accurately define the requirements for such an APU, and believe the goal is achievable. R&D work planned for 2007 includes the demonstration of a practical SOFC prototype, integrated on a typical truck platform. Cummins urges that the DOE request of $7.5 million be appropriated for this program in fiscal year 2007.

ELECTRICITY DELIVERY AND ENERGY RELIABILITY

Research and Development/Distributed Energy

Distributed Generation Technology Development—Advanced Reciprocating Engine Systems (ARES).—The goals of this multi-year program are to develop high efficiency, low emissions and cost effective technologies for stationary natural gas systems between 500 to 6,500 kW by the year 2010. Natural gas-fueled reciprocating engine power plants are preferred for reliability, low operating costs and point of use power generation. Traditional natural gas engines are approximately 32 to 37 percent efficient and have not kept pace with the fuel efficiency of their diesel counterparts. Technologies sponsored by the ARES program have demonstrated 44 percent engine efficiency, higher power densities and an expected reduction in life cycle

costs and CO_2 emissions. Improved combustion, air handling and controls developments have been successfully implemented in a field test engine and genset for evaluation at a customer site. Further technical challenges include combustion development for system efficiency, NOx reductions, advanced sensors and controls, hardware durability and lower life cycle costs. The development of point of use energy production supports national energy security needs, improved protection of critical infrastructure for homeland security concerns, and less dependence on the national electrical grid system. Cummins urges that $12 million be appropriated for this program in fiscal year 2007.

FOSSIL ENERGY

Office of Fossil Energy/Coal and Other Power Systems/Distributed Generation Systems

Fuel Cells—Innovative Concepts—Solid State Energy Conversion Alliance (SECA).—The goal of the Solid State Energy Conversion Alliance (SECA) project is to develop a commercially viable 3 to 10 kW solid oxide fuel cell (SOFC) module for RV, commercial mobile, and telecommunications markets. The modular nature of SOFCs makes them adaptable to a wide variety of stationery and mobile applications. SOFCs can play a key role in securing the Nation's energy future by providing efficient, environmentally sound electrical energy from fossil fuels or hydrogen. Progress on Phase 1 of the program has been positive, including low cost "balance of plant" and essential control systems for achieving the cost targets. An advanced SOFC stack technology is planned. This is a 10-year program that combines the efforts of the DOE national laboratories, private industry, universities, and other research organizations. Federal funding is critical to support research needed to keep this technology moving from the laboratory to commercial viability. Cummins urges that the DOE request of $75 million be appropriated for this program in fiscal year 2007.

Thank you for this opportunity to present our views on these programs which we believe are of great importance to the U.S. economy through viable transportation and power generation.

PREPARED STATEMENT OF THE FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY

The Federation of American Societies for Experimental Biology (FASEB) is a coalition of 22 independent scientific societies who together represent more than 84,000 biomedical research scientists. The mission of FASEB is to enhance the ability of biomedical and life scientists to improve, through their research, the health, well-being and productivity of all people. As your committee begins deliberations on appropriations for agencies under its jurisdiction, FASEB would like to offer its views on funding for the Department of Energy's Office of Science. In keeping with the "Energy Policy Act of 2005," FASEB recommends an appropriation of $4.15 billion for the Department of Energy's Office of Science in fiscal year 2007.

The DOE's Office of Science supports research programs that enable the scientific discoveries and technological innovations that strengthen the U.S. economy and protect our citizens. Its research programs have led to discoveries of fundamental importance to the economy of the United States and to the improvement of the health of its citizens.

DOE is the single largest supporter of basic research in the physical sciences in the United States, providing more than 40 percent of the total funding for this area of vital national importance. DOE funds fundamental research programs in basic energy sciences, biological and environmental sciences, and computational science. The Office of Science is the Federal Government's largest single funding source for materials and chemical sciences. It supports unique and vital programs for U.S. research in climate change, geophysics, genomics, life sciences, and science education. This backing enables DOE to accomplish its missions in energy security, national security, and environmental restoration.

Each year the national laboratories are used by over 19,000 researchers from universities, other government agencies, and private industry. The emphasis on interdisciplinary research at these state-of-the-art facilities gives DOE a unique role, allowing it to support and extend basic research sponsored by other Federal agencies. Since its inception in 1977, 42 DOE funded scientists have won Nobel Prizes in Chemistry, Physics, Physiology or Medicine. DOE plays a fundamental role at the interface of different sciences and many research activities funded by non-DOE agencies could not take place in the absence of the highly specialized research infrastructure built and managed by DOE. Sustained support for the research programs

of DOE is vital to the welfare of the citizens of the United States and to the scientific enterprise.

DOE BASIC RESEARCH ENHANCES HEALTH AND WELL-BEING

Research conducted at DOE facilities has led to the development of products and technologies that have improved the quality of American life and given researchers better insight into perplexing health questions. The following examples of DOE research accomplishments have been selected from a list of more than 100 major success stories that can be found on DOE's web site: (http://www.science.doe.gov/sub/accomplishments/Decades__Discovery/decades.htm).

Human Genome Research

Genome scientists are beginning to unravel the deeper meaning of the genetic code through the help of DOE funded research. Scientists at Oak Ridge National Laboratory have combined advanced computer technology with their knowledge of biology to develop a software program called GRAIL (Gene Recognition Analysis Internet Link). GRAIL emulates the human learning process as it searches large areas of human DNA sequence to define the physical structures of genes and is currently being used in more than 1,000 biotechnology companies and laboratories to track down genes that play central roles in human diseases.

Lyme Disease

Lyme disease, a bacterial infection transmitted to humans through a tick bite, causes nerve damage, arthritis, and fever. Researchers at Brookhaven National Laboratory used intense X-rays at the National Synchrotron Light Source to solve the three-dimensional structure of a key surface protein from the bacterium that causes Lyme disease. This discovery has already led to the development of a rapid and highly accurate diagnostic test for the disease. Ongoing research at Brookhaven has the potential to further improve vaccines. DOE synchrotron facilities are essential tools in a high percentage of studies of the molecular structures of biological macromolecules.

X-Ray Microscopy Becomes a National Research Resource

X-rays have shorter wavelengths and higher energy than visible light. These properties enable scientists to use X-rays to image features in cells that are too small to be seen using optical microscopy and other types of imaging. The DOE National Research resource for X-ray microscopy enables biologists to study sub-cellular structures in bacteria as well as human cells, enhancing our understanding of basic molecular and cellular processes and how they relate to damage or repair to DNA, disease development, and protein interactions.

World's Largest Nuclear Magnetic Resonance Spectrometer

The world's largest, highest performance nuclear magnetic resonance (NMR) spectrometer is now operational at the William R. Wiley Environmental Molecular Sciences Laboratory. The 900-MHz NMR spectrometer allows scientists to conduct projects of large size or complexity that require the additional resolution and sensitivity that a 900 MHz field can provide. The very high magnetic field of this spectrometer makes it possible for scientists to determine the 3-dimensional structures of biological macromolecules with high resolution.

New DOE Design for Artificial Retina

The development of a pliable, biocompatible 60 electrode artificial retina containing advanced microelectronics has undergone successful in vitro and acute safety testing in animals. Long-term testing of the device in animals under the conditions that it will be used in human patients is ongoing. A Cooperative Research and Development Agreement created by DOE's artificial retina program with the Second Sight Corporation of California will facilitate the translation of DOE-supported advanced technology into devices that will satisfy FDA testing requirements for use in blind patients.

DOE Allocates Massive Supercomputer Resources to Drive Advances in Combustion, Astrophysics and Protein Structure Research

DOE has allocated 6.5 million hours of supercomputing time to three scientific research projects aimed at increasing our understanding of ways to reduce pollution, to gain greater insight into how stars and solar systems form, and advance our knowledge about how proteins express genetic information. As one of the Nation's leading agencies for advancing scientific research, the Energy Department is proud to be able to award these major allocations for studying complex scientific problems that can transform our energy future and boost scientific research. The researchers

will use their awards to compute on the IBM supercomputer at DOE's National Energy Research Scientific Computing (NERSC) Center in Berkeley, Calif. NERSC is the DOE Office of Science's flagship facility for unclassified supercomputing. The three awards amount to 15 percent of NERSC's annual computing resources.

ADVANCING SOLUTIONS TO ENERGY AND ENVIRONMENTAL CONCERNS

Research funded by DOE is advancing solutions to current environmental problems, including the cleaning of toxic waste and reduction of harmful fuel emissions. Research into alternative fuels will help conserve energy, reduce the need for petroleum, and provide environmentally sustainable solutions to our energy needs. DOE research programs will lead to more cost efficient energy products with fewer harmful effects on our environment and reduced dependence on foreign oil. The following examples highlight contributions of research supported by DOE.

DOE Publishes Roadmap for New Biological Research for Energy and Environmental Needs

The DOE Genomics: Genomes to Life (GTL) Roadmap outlines a plan to explore the unseen world of microbes—starting with information encoded in their DNA sequences—to produce the new science needed for achieving cleaner and more secure energy resources, remediating toxic wastes and understanding the natural roles microbes play in the global climate. The 2005 GTL Roadmap builds on and expands the GTL research program begun in 2002. Scientific and technological progress achieved during the Human Genome Project, initiated by DOE in 1986, and the Microbial Genome Program, begun in 1994, provided the foundation for establishing the GTL program.

Mobilizing Microbes to Manage Waste

Recently, DOE-funded scientists have determined the DNA sequence of the genome of an organism that may be used to clean environmental contaminants. Geobacter sulfurreducens, a microbe commonly found in contaminated subsurface environments, can remove radionuclides and metals, including uranium, from groundwater. Researchers have found that the enrichment of groundwater samples with Geobacter sulfurreducens decreased uranium concentrations below the prescribed treatment level in some wells. Because this organism can be cultivated by adding simple carbon sources such as acetate to the groundwater, it may offer an inexpensive and simple way to remove environmental contaminants that pose a threat to humans.

Creating Renewable Energy Sources

The majority of U.S. energy is currently derived from fossil fuels. However, because fossil fuel reserves are finite and their continued use contributes to global warming by emitting substantial CO_2, it is essential to develop more sustainable energy sources. Biomass, or plant-derived, energy offers an appealing alternative to fossil fuels. Plant products are renewable and they have the potential to substantially reduce atmospheric CO_2 accumulation. By combining experimental biology with advanced computing, DOE's Genomes to Life program seeks to employ microbes to increase the production of biomass feed stocks, thereby reducing reliance on fossil fuels, decreasing CO_2 emission, and curbing global warming.

Reducing Our Dependence on Foreign Oil

DOE research is making it possible to create economically valuable products by modifying plants and microbes. By transferring genes from certain bacteria to plants, researchers at Michigan State University were able to create plants that synthesized biodegradable plastics. These plant products have the potential to replace plastics that are now derived from petroleum. DOE-funded researchers have also streamlined the process of converting cellulose to ethanol and made it possible to alter bacterial DNA to modify their production of ethanol and promote ethanol production in bacteria that do not normally create it. This work has important implications for meeting our Nation's energy needs and reducing U.S. reliance on foreign oil.

Increasing Fuel Efficiency

The recent rise in fuel prices underscores the importance of creating more fuel-efficient motor vehicles. Scientists in DOE's Materials Sciences and Engineering subprogram, a research program dedicated to finding economically feasible ways to increase materials performance, have contributed to boosting the fuel economy of automobiles. They have developed stronger, lighter weight materials that could increase vehicle efficiency by reducing vehicle weight; their study of alloys and ceramics has led to the creation of materials that retain their strength at high tempera-

tures. These materials could potentially be used to increase the efficiency of the combustion engine.

FUNDING RECOMMENDATION

The unique, interdisciplinary expertise and unparalleled research facilities of the Office of Science merit significantly increased funding. With this support, the Office of Science will be able to continue to attack major scientific challenges of fundamental importance to the security and well-being of our Nation. A significant increase in DOE funding is essential to ensure the development of necessary collaborations among physical, chemical, engineering, and biological scientists and to preserve the vitality of our national research enterprise. In keeping with the "Energy Policy Act of 2005," FASEB recommends an appropriation of $4.15 billion for the Department of Energy's Office of Science in fiscal year 2007.

PREPARED STATEMENT OF THE DISTRIBUTED ENERGY COALITION

Distributed Energy Coalition.——The DE Coalition brings together the undersigned manufacturers, utilities, propane companies, industry, State agencies, and others who firmly believe that the Federal Government is an essential partner in the transformation of our electric infrastructure to a more secure, flexible, efficient and growth-oriented energy resource for the 21st century. Distributed Energy is an indispensable element of this transformation, one that provides near term solutions with significant positive long-term implications. The Coalition believes that DE technologies can demonstrate their value and achieve full market readiness and recognition only with Federal leadership and support. Industry stands ready to invest their portion of the necessary resources in partnership with this Federal leadership. Private industry investment already exceeds and will ultimately be much greater than this modest request to have DOE "stay the course" with its current level of research, development and demonstration funding, but these programs cannot be duplicated by the private sector.

The Challenge: Following-Through on Distributed Energy.—The reliability and security of the Nation's energy infrastructure is approaching a crisis situation; our continued prosperity is directly linked to secure, reliable, and affordable energy. Fossil fuels are increasingly globally traded commodities, facing ever-increasing global demand. Electricity supplies are becoming strained in certain areas of the country as economic development outpaces expansion. Other regions face constraints on the ability to deliver power to where it's needed when it's needed. The vulnerabilities of our energy infrastructure were highlighted when the Great Lakes and Northeast regions lost power in August 2003 and when hurricanes Katrina and Rita struck the Gulf Coast in September 2005. And the possibility of terrorist attacks on central station power plants and on critical transmission and distribution facilities remains a major concern.

Recognizing that a key element of a sensible response to this national crisis is the development and deployment of Distributed Energy (DE) systems, Congress included in the Energy Policy Act of 2005 a number of provisions authorizing increased Federal focus on distributed energy research, development, demonstration and policy support, including authorization of $730 million for DE over the next 3 years. The President enthusiastically signed EPAct05 into law. Congress and the President, with these actions, clearly reaffirmed the critical role DE can play in enhancing the efficiency, reliability, security and flexibility of the Nation's energy infrastructure through solutions applied at the local level.

What's Needed to Ensure Success.—Despite a very tough budget climate, the Federal Government must now align its policy objectives with a sustained commitment to invest in the Distributed Energy programs that will provide these solutions. At a minimum, Congress must act to maintain dedicated funding in the Department of Energy's DE program within the Office of Electricity Delivery and Energy Reliability at a level consistent with prior years by appropriating $60 million for fiscal year 2007. The three key focus areas of RD&D need are:

—*Alternative Energy Networks and Disaster Response*.—Develop long-term energy solutions to the Nation's rapidly expanding need for reliable, secure, and efficient energy through the integration of loads and DE sources into local energy networks and microgrids.

—*Advances in DE Technologies and Systems*.—Complete the technology development for the diverse array of DE systems that support grid enhancement.

—*Outreach and Technology Transfer at the Local Level*.—Ensure maximum impact through technology transfer to local implementers, including those responsible for policies, codes, and standards.

Benefits of the DE Program.—Distributed Energy includes technologies and systems[1] that, at the point of use, efficiently produce electricity, recycle waste heat, and store energy. DE supports and supplements the existing power generation and transmission infrastructure, and provides critical societal benefits including:

—*Energy Reliability and Quality*.—DE systems can operate in parallel with the grid to provide enhanced power reliability without new transmission or distribution infrastructure. DE technologies deliver the high quality power required of our digital economy.

—*Energy Security*.—DE systems can operate independently of the grid to sustain critical services (e.g. healthcare, communications, shelter, public safety) after natural or man-made disasters.

—*Energy Efficiency*.—DE systems can recycle waste energy and put it to productive use for heating and cooling, increasing fuel utilization efficiency compared to central power and increasing customer benefit from each cubic foot of natural gas or propane consumed.

—*Environmental Stewardship*.—Use of efficient DE technologies decreases emission of criteria pollutants (NOx/CO) and greenhouse gases. DE can use local, renewable fuels (e.g. landfill gas) to provide electrical and thermal energy.

—*Economic Development*.—DE directly relieves grid congestion and provides power not only to remote sites but to any constrained area, avoiding investment for new grid wires in cities and beyond the "end of the line."

Energy market forces do not assign full value to recognized but externalized DE benefits such as reduced pollution, enhanced energy efficiency, improved productivity, and reduced infrastructure costs. In fact, today's market provides disincentives for local distributed energy systems, technologies, equipment and business models. The above-described public benefits warrant public support of DE technologies; a modest amount of public funding can leverage large amounts of private resources by demonstrating value in the market and reducing artificial barriers to deployment in industrial, commercial, and residential applications.

America's DE Public/Private Partnership is a Success . . . So Far.—The Department of Energy described the goal of the Distributed Energy (DE) Program as: "[b]y 2015, the Distributed Energy Resources Program will develop and deploy a diverse array of high efficiency integrated distributed generation and thermal energy technologies at market competitive prices so that homes, businesses, industry, communities, and electricity companies elect to use them." DOE's leadership of this public/private partnership has brought us through the initial stages of component development and system integration. However, this is just a beginning. The accomplishments of the DOE/DE program to-date include:

—The initial development phases of advanced prime movers—gas turbines, microturbines, and reciprocating engines—that are more efficient, less polluting, and more affordable.

—Adaptation of thermal technologies to recycle waste energy to cool, heat, and dehumidify business spaces and industrial processes.

—First generation packaged DE systems of integrated prime movers and thermal components that are designed to operate safely, reliably, and efficiently without additional onsite engineering.

—The establishment of eight Regional Application Centers, covering all 50 States, that provide local guidance, tools, and training to successfully apply DE.

Next Steps for DE to Achieve DOE's 2015 Goals.—DOE must maintain its leadership of this public/private partnership in order to achieve the goal of a diverse array of DE solutions that enhance the grid in an affordable and environmentally-friendly manner. Only with Federal leadership and support can DE technologies demonstrate their value and achieve full market readiness and recognition. Achieving this goal maximizes the public benefits of DE.

Industry stands ready to invest their portion of the necessary resources in partnership with the Office of Electricity Delivery and Energy Reliability's leadership to develop advanced technologies, break down barriers and realize our common goals. When balancing budgets under critical times like these, industry recognizes the need to prioritize and focus government support. The DE Coalition represents over 1 million workers, holding jobs in every State, seeking to support the Nation's electric grid with efficient local energy solutions that can withstand hurricanes and ice storms, secure critical needs during power disruptions or terrorist attack, and

[1] DE technologies and systems include high efficiency reciprocating engines; microturbines; industrial gas turbines; fuel cells; thermally activated technologies such as steam turbines, absorption chillers and desiccants; advanced storage systems; control systems; and integrated systems that incorporate advanced components into highly efficient packages for heating, cooling, and useful energy.

conserve energy supplies by efficient generation close to the point of use as well as recycling local energy that is otherwise wasted. Our request is simple: stay the course and maintain research, development and demonstration funding for the Department of Energy's, Office of Electricity Delivery and Energy Reliability DE program.

This is a 10-year program that combines the efforts of the DOE national laboratories, private industry, universities, and other research organizations.

The Distributed Energy Coalition urges that $35 million be appropriated for the Distributed Energy Technology Research program in fiscal year 2007. The Distributed Energy Technology Research program improves the energy and environmental performance of distributed technologies (turbines, microturbines, engines, desiccants, chillers, and heat exchangers) so that the Nation can have more energy choices to achieve a more flexible and smarter energy system.

The Distributed Energy Coalition urges that $25 million be appropriated for the System Integration and Cooling, Heating and Power (CHP) program in fiscal year 2007. The System Integration and Cooling, Heating, Power (CHP) activity develops highly-efficient integrated energy systems that can be replicated across end-use sectors which will help demonstrate an R&D objective or address a technical barrier. The activities integrate power producing prime movers that generate heat and utilize it for domestic hot water, steam, and/or thermally activated technologies that drive absorption chillers and/or desiccant units. These systems will reduce energy costs and emissions by using energy resources more efficiently.

Thank you for this opportunity to present our views on this program which we believe is of great importance to the U.S. economy through viable on-site power generation solutions.

The Distributed Energy Coalition companies that support this testimony are: ACEEE; Aegis Energy Services, Inc.; Allegiance Energy Systems, LLC.; Association of State Energy Research and Technical Transfer Institutions (ASERTTI); Atlantic Energy Services; Avalon Consulting, Inc.; BroadUSA; Burns & McDonnell; Capstone Turbine Corp.; Caterpillar Inc.; Cinergy Solutions; Climate Energy, Inc.; Cummins Power Generation; Cummins Power Generation Project Company; DG Power Systems, Inc.; Discovery Insights LLC; Elliott Energy Systems; Enercon Engineering; Energy and Environmental Analysis, Inc.; Energy Solution Center; Energy Spectrum Developers, LLC; Environmental Business Association of NY State; EXERGY Partners Corp.; Gas Technology Institute; Gas Turbine Association; Greenta.com; Infinia Corporation; Ingersoll-Rand; International District Energy Association (IDEA)—represents nearly 700 company and university members who operate district energy systems in 38 of the 50 United States; Maine State Energy Program; National City Energy Capital; National Fuel Gas Distribution Corporation; National Propane Gas Association—3,500 companies in all 50 States and 38 affiliated State or regional associations, representing every segment of the propane industry; Northeast Combined Heat and Power Association; NiSource Energy Technologies; North Carolina Solar Center; North East Midwest Institute; Northern Power Systems; Pace Energy Project; Power Equipment Associates; Primary Energy Ventures; Redwood Power Company, Inc.; Rensselaer Polytechnic Institute—Future Energy Systems Center; Resource Dynamics Corp.; Sacramento Municipal Utility District; Siemens Power Generation, Inc.; Solar Turbines, Inc.; Southern California Gas Company; Southwest Gas Company; Spectra Environmental Group Inc. & Spectra Engineering, PC; Steven Winter Associates; Sustainable Resources Group; Turbosteam Corporation; TVC Systems; United States Combined Heat and Power Association; UTC Power (a business unit of United Technologies, Inc.); University of Illinois at Chicago; Waukesha Engine Division; Woolpert, Inc.

PREPARED STATEMENT OF THE STATE TEACHERS' RETIREMENT SYSTEM, STATE OF CALIFORNIA

Summary

Acting pursuant to Congressional mandate, and in order to maximize the revenues for the Federal taxpayer from the sale of the Elk Hills Naval Petroleum Reserve by removing the cloud of the State of California's claims, the Federal Government reached a settlement with the State in advance of the sale. The State waived its rights to the Reserve in exchange for fair compensation in installments stretched out over an extended period of time.

Following the settlement, the sale of the Elk Hills Reserve went forward without the cloud of the State's claims and produced a winning bid of $3.53 billion, far beyond most expectations. Under the terms of the Settlement Agreement between the Federal Government and the State, the State is to receive a 9 percent share of the

sales proceeds as compensation for its claims in installments. Each annual installment of compensation is subject to a Congressional appropriation. For each of the past 7 fiscal years, Congress has appropriated the annual installments of Elk Hills compensation for the State as called for under the Settlement Agreement.

The State respectfully requests an appropriation of at least $9.7 million in the subcommittee's bill for fiscal year 2007, in order to meet the Federal Government's obligations to the State under the Settlement Agreement. The Elk Hills appropriation has the broad bipartisan support of the California House delegation.

Background

Upon admission to the Union, States beginning with Ohio and those westward were granted by Congress certain sections of public land located within the State's borders. This was done to compensate these States having large amounts of public lands within their borders for revenues lost from the inability to tax public lands as well as to support public education. Two of the tracts of State school lands granted by Congress to California at the time of its admission to the Union were located in what later became the Elk Hills Naval Petroleum Reserve.

The State of California applies the revenues from its State school lands to assist retired teachers whose pensions have been most seriously eroded by inflation. California teachers are ineligible for Social Security and often must rely on this State pension as the principal source of retirement income. Typically the retirees receiving these State school lands revenues are single women more than 75 years old whose relatively modest pensions have lost as much as half or more of their original value to inflation.

State's Claims Settled, as Congress Had Directed

In the National Defense Authorization Act for Fiscal Year 1996 (Public Law 104–106) that mandated the sale of the Elk Hills Reserve to private industry, Congress reserved 9 percent of the net sales proceeds in an escrow fund to provide compensation to California for its claims to the State school lands located in the Reserve.

In addition, in the Act Congress directed the Secretary of Energy on behalf of the Federal Government to "offer to settle all claims of the State of California . . . in order to provide proper compensation for the State's claims." (Public Law 104–106, § 3415). The Secretary was required by Congress to "base the amount of the offered settlement payment from the contingent fund on the fair value for the State's claims, including the mineral estate, not to exceed the amount reserved in the contingent fund." (Id.)

Over the year that followed enactment of the Defense Authorization Act mandating the sale of Elk Hills, the Federal Government and the State engaged in vigorous and extended negotiations over a possible settlement. Finally, on October 10, 1996 a settlement was reached, and a written Settlement Agreement was entered into between the United States and the State, signed by the Secretary of Energy and the Governor of California, under which the State would receive 9 percent of the sales proceeds in annual installments over an extended period.

The Settlement Agreement is fair to both sides, providing proper compensation to the State and its teachers for their State school lands and enabling the Federal Government to maximize the sales revenues realized for the Federal taxpayer by removing the threat of the State's claims in advance of the sale.

Federal Revenues Maximized by Removing Cloud of State's Claim in Advance of the Sale

The State entered into a binding waiver of rights against the purchaser in advance of the bidding for Elk Hills by private purchasers, thereby removing the cloud over title being offered to the purchaser, prohibiting the State from enjoining or otherwise interfering with the sale, and removing the purchaser's exposure to treble damages for conversion under State law. In addition, the State waived equitable claims to revenues from production for periods prior to the sale. The Reserve thereafter was sold for a winning bid of $3.53 billion in cash, a sales price that substantially exceeded earlier estimates.

The Money Is There to Pay the State

The funds necessary to compensate the State have been collected from the sales proceeds remitted by the private purchaser of Elk Hills and are now being held in the Elk Hills School Lands Fund for the express purpose of compensating the State. Taking into account the 1 percent government-wide rescission in the fiscal year 2006 Defense Appropriations Act, the Elk Hills School Lands Fund should have a positive balance of at least $18.18 million.

Congress Should Appropriate $9.7 Million for the Fiscal Year 2007 Installment of Elk Hills Compensation

As noted above, the State's 9 percent share of the adjusted Elk Hills sales price of $3.53 billion is $317.70 million. To date, Congress has appropriated seven installments of $36 million and one installment of $48 million that was reduced to $47.52 million by the 1 percent across-the-board rescission under the fiscal year 2006 Defense Appropriations Act, for total appropriations to date of $299.52 million of Elk Hills compensation owed to the State. Accordingly, the Elk Hills School Lands Fund should have a positive balance of at least $18.18 million.

The State recognizes that although the equity finalization process to determine the final split of the sales proceeds between the Federal Government and ChevronTexaco, as the selling co-owners of the Elk Hills field, is in its final stages after some 8 years, the process still has not been fully completed. DoE has calculated that under the worst case scenario for the Federal Government based on the current status of the equity finalization, the State's share would fall by a total of $6.03 million. The State has agreed to a "hold-back" of that amount to protect the Federal Government's interest and is not seeking an appropriation of that amount for fiscal year 2007. This reduces the available balance in the Elk Hills School Lands Fund to $12.15 million.

The other factor affecting the total amount of the State's compensation is its share of the direct expenses that had been incurred to conduct the sale of the Elk Hills field back in February 1998. This is an issue entirely independent of and unaffected by the resolution of the equity finalization split just discussed above. The Settlement Agreement provides that the Federal Government shall pay the State "9 percent of the proceeds from the sale of the Federal Elk Hills Interests that remain after deducting from the sales proceeds the costs incurred to conduct such sale." This reflects the Congressional direction that, "In exchange for relinquishing its claim, the State will receive 7 [9 in the final legislation] percent of the gross sales proceeds from the sale of the Reserve that remain after the direct expenses of the sale are taken into account." (House Rept. No. 104–131, Defense Authorization Act for Fiscal Year 1996, Public Law 104–106).

The State agrees that the $27.13 million incurred for appraisals, accounting expenses, reserves report, and brokers' commission are appropriate sales expenses. (See Letter of the California Attorney General to DoE, dated February 10, 2005 (attached)). Accordingly, the State's 9 percent share of these proper sales expenses reduces the available balance of the Elk Hills School Lands Fund by $2.44 million to $9.7 million.

Costs of conducting the equity adjustment are properly viewed as ongoing costs incurred due to the joint operation of the Elk Hills oil field by the Federal Government and ChevronTexaco, since the equity adjustment already was required under their joint operating agreement and related to pre-sale production revenues. Similarly, costs of environmental remediation of the Elk Hills field was a cost attributable to the prior operation of the field, which created any environmental problems that exist. That such environmental remediation relates to the ongoing operation of the oil field is underscored by the fact that the Federal Government is currently engaged in the phased environmental remediation of a Naval Petroleum Reserve that it is not selling—NPR–3 (Teapot Dome), as evidenced by its fiscal year 2006 budget request. Accordingly, the costs of the equity adjustment and environmental remediation are not properly treated as direct costs incurred to conduct the sale of the Elk Hills field back in February 1998 and should not be charged to the State's compensation.

CONCLUSION

Therefore, of the current Elk Hills School Lands Fund balance of $18.18 million, taking into account the "hold-back" for worst case scenario under equity finalization and deducting the appropriate direct costs of conducting the sale, the State respectfully requests the appropriation of at least $9.7 million for Elk Hills compensation in the subcommittee's bill for the fiscal year 2007 installment of compensation, in order to meet the Federal Government's obligations to the State under the Settlement Agreement.

PREPARED STATEMENT OF THE AMERICAN SOCIETY FOR MICROBIOLOGY

The American Society for Microbiology (ASM), the largest single life science organization in the world, with more than 43,000 members, appreciates the opportunity to provide written testimony on the administration's fiscal year 2007 budget proposal for the Department of Energy (DOE) science programs. The ASM mission is

to enhance microbiology, to gain a better understanding of basic life processes, and to promote the application of this knowledge to improve health, economic, and environmental well-being.

The DOE supports microbiological research through programs involving microbial genomics, climate change, bioremediation, and analyses of basic biological processes important in the search for alternative energy sources. The ASM commends and supports the administration's recommended 14 percent increase for a total of $4.1 billion for the DOE Office of Science. The DOE Office of Science is one of the three priority agencies in the President's American Competitiveness Initiative (ACI), which supports a wide range of research and development related to scientific innovation.

STRONG SUPPORT IS NEEDED FOR THE DOE OFFICE OF SCIENCE

Scientific progress and the U.S. economy continue to benefit from investments in basic sciences made by the DOE Office of Science. The DOE Office of Science, the Nation's primary source of support for research in the physical sciences, is also an essential partner in several critical areas of biology and environmental science as well as in mathematics, computing, and engineering. Furthermore, the Office of Science supports a unique system of programs based on large-scale, specialized user facilities that bring together teams of scientists focused on such challenges as global warming, genomic sequencing, and energy research. The Office of Science is also an invaluable partner with the National Institutes of Health (NIH) and the National Science Foundation (NSF) through its support for several important interdisciplinary research efforts. The Office of Science also supports peer-reviewed, basic research at universities and colleges across the United States in science areas relevant to the DOE. These programs contribute to the knowledge base and training of the next generation of scientists.

The Office of Science will play an important role in the American Competitiveness Initiative, which seeks to double Federal spending in the sciences during the next decade. In particular, the Federal Advanced Energy Initiative aims to reduce American dependence on imported energy resources. Many of the DOE scientific research programs share the goal of producing and conserving energy in environmentally responsible ways. These programs include basic research projects in microbiology as well as extensive development of biotechnology-based systems to produce alternative fuels and chemicals from biomass, to recover and improve processes for refining fossil fuels, to remediate environmental problems, and to reduce wastes and pollution. Our Nation's future competitiveness and innovation capabilities rely inclusively on all basic sciences and technologies.

The administration's proposed budget for fiscal year 2007 requests $4.1 billion for the Office of Science. The ASM recommends that Congress support the proposed budget of $4.1 billion for the DOE Office of Science in the fiscal year 2007 appropriation, an increase of $505 million over fiscal year 2006.

BIOLOGICAL AND ENVIRONMENTAL RESEARCH (BER) PROGRAMS

The proposed budget for the base programs of the Biological and Environmental Research (BER) program in fiscal year 2007 is $510 million, a $59 million increase over fiscal year 2006. For over 50 years, the BER program has been advancing environmental and biomedical knowledge that promotes national security through improved energy production, development, and use; international scientific leadership that underpins our Nation's technological advances; and research that improves the quality of life for all Americans.

BER GENOMICS: GTL PROGRAM

The DOE is the lead Federal agency supporting genomic sequencing of non-pathogenic microbes through its Genomics: GTL Program. The sequence information being compiled through this program provides knowledge into how to design biotechnology-based processes that will function in extreme conditions and could potentially address national priorities, such as energy and environmental security, bioremediation of waste sites, global warming and climate change, and energy production. Microbes power global carbon and nitrogen cycles, clean up wastes, and transform energy. They are an important source of biotechnology products, making the DOE research programs extremely valuable for advancing our knowledge of the nonmedical microbial world. Knowing the complete DNA sequence of a microbe provides important clues about the biological capabilities of the organism and is an important step toward developing strategies for efficiently detecting, using, or reengineering particular microbes to address key national energy and environmental issues. The DOE Genomics: GTL genomic sequencing program has an important impact on

nearly every other activity within BER. ASM supports the administration's request of $135 million for the Genomics: GTL program in fiscal year 2007, a $50 million increase over fiscal year 2006.

In addition to this program, a substantial portion of the analytic capacity within the DOE Joint Genome Institute (JGI) continues to be devoted to the sequencing of individual microbial genomes as well as the DNA in mixtures from microbial communities dwelling within specialized ecological niches. As part of these efforts, the DOE continues to analyze complete DNA sequences of genomes in microbes with potential uses in energy, waste cleanup, and carbon sequestration.

About 40 percent of the JGI capacity is dedicated to serving the DOE's direct needs, primarily through the Genomics: GTL program, while the remaining 60 percent of this capacity serves as a state-of-the-art DNA sequencing facility for scientists who submit proposals subject to merit review. These sequencing projects will be conducted at no additional cost for the wider scientific community and are expected to have a substantial impact on the BER Environmental Remediation Sciences program, with much of this program focused on using microbes to cleanup environmental sites. In addition, the Genomics: GTL program will continue to have a major impact on the BER Climate Change Research program because of the role microbes play in the global carbon cycle and the potential for developing biology-based processes for sequestering carbon.

The ASM supports the administration's request for $62 million to continue supporting the Joint Genome Institute program in fiscal year 2007. The ASM applauds the DOE's leadership in recognizing this important need in science and endorses expanding these microbial genome sequencing efforts, particularly to learn more about the functions and roles of the many microorganisms that resist efforts to be grown in culture. This program provides a basis for using genomic information more broadly to understand life at the cellular and at even more complex levels.

ENVIRONMENTAL REMEDIATION

The overall goal of the DOE Environmental Remediation subprogram (ER) is to support research that improves the science underpinning the cleanup of the DOE's sites and to support related operations. Because traditional cleanup strategies may not work or be cost effective, the ER subprogram supports basic research that aims to develop and validate technical solutions to these complex remediation problems. The goal is to develop innovative new remediation technologies that reduce risks and provide savings in costs and time. The ASM supports the administration's request for nearly $97.2 million for the Environmental Remediation subprogram in fiscal year 2007. The DOE environmental remediation programs deserve sustained support.

CLIMATE CHANGE RESEARCH

Although the ASM is pleased to see that the administration is continuing to support Climate Change Research in its fiscal year 2007 budget, the proposed budget of nearly $135 million for this important activity is a $6.5 million decrease from fiscal year 2006. The Climate Change Research subprogram seeks to apply the latest scientific knowledge to the potential effects of greenhouse gas and aerosol emissions on the climate and the environment. This program is the DOE's contribution to the interagency U.S. Global Change Research Program proposed by President Bush in 1989 and codified by Congress in the Global Change Research Act of 1990 (Public Law 101–106).

The Ecological Processes portion of this subprogram is focused on understanding and simulating the effects of climate and atmospheric changes on ecosystems. Research will also identify potential feedbacks from changes in the climate and atmospheric composition. This research is critical to better understanding of the changes occurring in ecosystems from increasing levels of atmospheric pollutants. This program is vital to advance understanding of energy balances between the surface of the Earth and the atmosphere and how this will affect the planet's climate and ecosystems. The ASM recommends continued support for important Climate Change research within the DOE Office of Science.

BASIC ENERGY SCIENCES

The administration request for the Office of Basic Energy Sciences (BES) for fiscal year 2007 is $1.4 billion, an increase of $28.6 million over fiscal year 2006. The ASM is concerned with BES's efforts to move away from energy biosciences research. This program is a principal sponsor of fundamental research for the Nation in the areas of materials sciences, chemistry, geosciences, and biosciences as they relate to energy. The program supports initiatives in the microbiological and plant sciences fo-

cused on harvesting and converting energy from sunlight into feedstocks such as cellulose and other products of photosynthesis, as well as how those chemicals may be further converted into energy-rich molecules such as methane, hydrogen, and ethanol. Alternative and renewable energy sources are of strategic importance to the U.S. energy portfolio, and the DOE is advancing basic research in this critical area. Genomic technologies are a tremendous new resource for further advancing the DOE's bioenergy goals.

NEW TECHNOLOGIES AND UNIQUE FACILITIES

New technologies and advanced instrumentation derived from the DOE's expertise in the physical sciences and engineering have become increasingly valuable to biologists. Beam lines at the DOE's facilities and other advanced technologies for determining molecular structures of cell components are advancing our understanding of cell functions and are being applied to new drug design. The DOE advances in areas such as high-throughput, low-cost DNA sequencing, mass spectrometry, cell imaging, and computational analyses of biological molecules and processes are critical to our national biological research enterprise. The ASM supports recommended funding of $15 million for infrastructure development of research user facilities under BER.

The DOE has unique field research facilities for conducting environmental research that is important for understanding biogeochemical cycles and global change, and for restoring environmental sites. The DOE's ability to conduct large-scale science projects and to draw on physics, mathematics and the computer sciences, and engineering is also critical for biological research.

CONCLUSION

The ASM supports the recommended 14 percent increase for a total of $4.102 billion for the DOE Office of Science in fiscal year 2007, and recommends strong support for the DOE BER programs.

The ASM appreciates the opportunity to provide written testimony and would be pleased to assist the subcommittee as it considers the fiscal year 2007 appropriation for the DOE.

PREPARED STATEMENT OF THE GAS MACHINERY RESEARCH COUNCIL

Mr. Chairman and members of the subcommittee, we appreciate the opportunity to provide testimony in support of the DOE Natural Gas Infrastructure Program and the fiscal year 2007 budget. We are concerned that no funds were allotted for this program in fiscal year 2006 and request support of this program in fiscal year 2007 in the amount of $25 million.

The Gas Machinery Research Council (GMRC) provides its member companies and the natural gas industry with the benefits of an applied research and technology program directed toward improving the reliability and cost effectiveness of the design, construction, and operation of mechanical and fluid systems. Membership includes 70 companies involved in all aspects of natural gas compression, including all major natural gas pipelines, production companies, packagers, and service companies.

The first generation compression infrastructure in the 1920's and 1930's consisted of many small slow-speed compressors to move gas from producing regions to markets. To provide the necessary expansion of these early pipeline systems in the decades after World War II, a second generation of larger and higher-speed machines promised a significant reduction in installed cost. As these compressors were installed, they experienced many reliability and operational problems. To address this challenge, in 1952 the pipeline industry formed what is now the Gas Machinery Research Council. Through research done at Southwest Research Institute (SwRI), an Analog Simulator was developed to optimize the design of pulsation filter bottles and predict pulsation performance. This design service has been operating continuously since 1955, bringing pulsation problems under control.

In recent years the promise of dramatic cost reductions has driven the industry towards even higher-speed, larger horsepower reciprocating compression powered by modern gas engines or large electric motors. With this new technology came new challenges. The industry now faces a technology transition similar to 50 years ago.

The last generation of slow-speed machines is no longer commercially available because they are perceived as unaffordable. While affordable, the current generation of high-horsepower, high-speed compression requires advancements in technology to meet their full potential to address the pipeline industry's compression needs.

In fiscal year 2005, GMRC began the Advanced Reciprocating Compression Technology (ARCT) project under the DOE Natural Gas Infrastructure Program. The objective of the ARCT project was to develop the next generation of compression technology to enhance the efficiency, reliability and integrity of pipeline operations through improved compression. The suite of technologies developed during this program would provide pipeline operators with improved and affordable choices for new compression and products that can be retrofitted to existing machines. These retrofits would reduce the amount of fuel consumed to move gas from the producer to market and reduce emissions, resulting in savings for both the industry and the consumer.

We are continuing aspects of this program using industry funds, but at greatly reduced levels. A resumption of the DOE partnership would allow these technologies to be brought to the market place and to the benefit of gas consumers far earlier.

Natural Gas will continue to be a major source of worldwide energy as energy usage increases in the future. The majority of this increase will be provided by fossil fuels with the natural gas share increasing because of its worldwide availability and clean combustion characteristics. Currently, the U.S. domestic production of natural gas accounts for over 90 percent of our needs, whereas we import 65 percent of our oil needs. Maintaining the country's natural gas independence is vital to our security and will allow the United States to continue to provide world leadership in the development and application of new natural gas technologies. A joint industry/government research and development program can ensure that the industry infrastructure is in place for years to come.

The 70 member companies of GMRC strongly support the DOE Natural Gas Infrastructure Program and urge you to re-establish the program funding in fiscal year 2007 in the amount of $25 million. This will allow development and implementation of technologies critical to infrastructure needs.

We thank you for your consideration of these funding requests.

PREPARED STATEMENT OF FUELCELL ENERGY, INC.

FuelCell Energy appreciates the opportunity to submit this statement in support of the Department of Energy's Fossil Energy, Fuels and Power Systems, Fuel Cell Program. We urge the subcommittee to continue to support this breakthrough program by appropriating $75 million for development of this highly efficient, clean, and secure energy technology.

DOE's Fossil Energy Fuel Cell Program, through the Solid State Energy Conversion Alliance (SECA) fuel cell and fuel cell hybrid activity, is developing technology to allow the generation of highly efficient, cost-effective, carbon-free electricity from domestic coal resources with near-zero atmospheric emissions in central station applications. The program directly supports the President's FutureGen project through the development of cost-effective, highly efficient, power blocks that facilitate sequestration in coal-based systems. The technology will also permit grid independent distributed generation applications by 2010.

SECA fuel cell/turbine hybrids operating on coal gas are building blocks for zero emissions power, the ultimate goal of the President's FutureGen Program. These hybrids are projected to be available at a cost of $400/kW, a 10-fold reduction in cost from existing fuel cell technology. In addition the technology developed in this program will produce electricity at up to 60 percent in coal-based systems, produce near-zero emissions, and be compatible with carbon sequestration.

In all applications SECA fuel cells will be both low-cost, with the above-stated goals of $400/kW, as well as highly efficient. Integrated with coal gasification, such systems will approach 60 percent efficiency compared to the existing coal-based power generation fleet average of about 33 percent efficiency. In distributed generation applications even higher efficiencies may be reached, and cogeneration opportunities can further increase efficiency.

Along with these attributes fuel cells are one of the cleanest technologies available in terms of atmospheric emissions, which enhances their attractiveness for urban applications or applications in areas of non-attainment for Clean Air Act emissions. They also provide 24-hour, silent operation.

Finally, coal-based fuel cell systems will increase energy security by using domestic resources. In distributed generation applications fuel cells can eliminate transmission and distribution system infrastructure concerns and issues by providing generation near the point of use and by being able to operate in a grid-independent mode.

The SECA Program consists of six integrated industrial manufacturing teams designing fuel cell or fuel cell/hybrid systems, developing the necessary materials, and

ultimately responsible for deploying the technology. These teams are complemented by two to three dozen core technology performers providing generic problem-solving research needed to overcome barriers to low-cost, high-performance technology as identified by DOE and the manufacturing teams. The core technology teams are universities, national laboratories, and other research-oriented organizations. Historically the manufacturing teams receive 60 percent of the program funding and the core technology developers receive 40 percent. This unique structure assures that a variety of approaches to solving the problems associated with fuel cells will be undertaken in a manner that will increase the chances of success for this highly complex technology.

Three of the six manufacturing teams, including FuelCell Energy, have recently been awarded contracts to develop fuel cell/hybrid technology for application to large central generation systems characterized by FutureGen. The remaining manufacturing teams are developing fuel cells for possible use in both these large systems as well as in distributed generation applications such as auxiliary power units, military power applications and remote or on-site power generation.

The DOE budget request for this program is $63.3 million, a slight increase from fiscal year 2006 funding. This level of funding, if dedicated to the base SECA program would be about $13 million more than amounts available to the base program in fiscal year 2006, but still below fiscal year 2005 funding levels. In fiscal year 2006 and 2007 the program is entering Phase II of development, which involves larger scale development work on the part of manufacturing teams in the program and which will require more funding to continue to meet the DOE proposed schedule. As part of this greater commitment, manufacturing teams entering Phase II are required to provide a minimum of 50 percent of the funds needed for the program, which is an increase from the 25 percent cost-sharing required in Phase I. For these reasons additional funding is needed to continue progress apace for this exciting new technology.

We believe that the SECA fuel cell/hybrid program has achieved the progress to date as anticipated by the program managers, and will continue to display such progress given sufficient funding support by DOE and the Congress. Hybrid technology has been successfully integrated into the program and an emphasis on use with coal-based systems has been established. Industry partners in the program have continued and increased cost-sharing support. This technology is essential to meeting the efficiency and emissions goals of the President's FutureGen program and will also provide low-cost, low-emissions alternatives for distributed generation applications. Therefore, we urge you to support our request for $75 million to execute the DOE Fossil Energy, Fuels and Power Systems, Fuel Cell Program in fiscal year 2007.

PREPARED STATEMENT OF THE ALASKA ENERGY AUTHORITY

The Alaska Energy Authority (AEA), the State of Alaska's lead agency for energy planning and development, thanks the subcommittee for this opportunity to present written testimony in support of U.S. Department of Energy (USDOE) appropriations. AEA works in partnership with USDOE, the Denali Commission, and other Federal agencies to provide reliable and affordable energy to the citizens of our State. To sustain this work, we request the subcommittee:

—Reinstate USDOE funding and support for the national Regional Biomass Energy Program and the Geothermal Program. These modestly funded programs help us develop valuable, locally-funded projects such as:
  —A sawmill waste-fired heating system that saves the City of Craig, Alaska $100,000 per year, and
  —A 400 kW geothermal power plant at Chena Hot Springs, Alaska that saves $270,000 per year in diesel fuel costs;
—Support USDOE funding for the State Energy Program and the Combined Heat and Power Program. These cost-share programs help us identify efficiency projects such as:
  —A waste heat recovery project that saves Kotzebue, Alaska $150,000 per year, and
  —A lighting upgrade project that saves the Iditarod School District $16,000 per year;
—Support the USDOE's Arctic Energy Office in Fairbanks. The Arctic Energy Office and its partner, the University of Alaska, play crucial roles in the research, development, and deployment of fossil energy technology in remote areas of Alaska. Recognizing that Alaska also holds substantial renewable energy re-

sources, we request that the subcommittee consider support for the Arctic Energy Office in the area of energy efficiency and renewable energy.

Again, thank you for the opportunity to present these written comments to the subcommittee. Your staff may contact me with questions or requests for further information.

PREPARED STATEMENT OF THE NATIONAL ASSOCIATION FOR STATE COMMUNITY SERVICES PROGRAMS

As Chair of the Board of Directors for the National Association for State Community Services Programs (NASCSP), I am pleased to submit testimony in support of the Department of Energy's (DOE) Weatherization Assistance Program (WAP) and in support of DOE State Energy Programs (SEP). We are seeking a fiscal year 2007 appropriations level of $275 million for the WAP and $74 million for SEP. NASCSP believes these funding levels are essential in continuing and improving the outstanding results of these State grant programs for our citizens.

NASCSP is the member organization representing the States on issues related to the WAP and the Community Services Block Grant. The State offices represented by our organization would like to thank this committee for its continued support of the WAP and SEP through the years. The $242.6 million in WAP funds provided by the committee in 2006 is expected to result in:

—An additional 97,000 homes occupied by low-income families receiving energy efficiency services, thereby reducing the energy use and associated energy bills; and

—Greenhouse gases and environmental pollutants being significantly reduced due to the decrease in energy use by these newly weatherized homes; and

—Nearly 20,000 full time, highly skilled, jobs being supported within the service delivery network and in related manufacturing and supplier businesses;

—Weatherization reduces the need for importing foreign oil by as much as 18 million barrels per year and this number continues rise.

The WAP is the largest residential energy conservation program in the Nation and serves a vital function in helping low-income families reduce their energy use. Developed as a pilot project in 1975, the WAP was institutionalized in 1979 within DOE and is operated in all 50 States, the District of Columbia, and on several Native American reservations. The WAP funds are used to improve the energy efficiency of low-income dwellings using the most advanced technologies and testing protocols available in the housing industry. The energy use reduction resulting from these efforts helps our country reduce its dependency on foreign oil and decreases the cost of energy for families in need. With lower energy bills, these families can increase their usable income and buy other essentials like food, shelter, clothing, medicine, and health care.

The WAP provides an energy audit for each home to identify the most cost-effective measures, which typically include adding insulation, reducing air infiltration, servicing the heating and cooling systems, and providing health and safety diagnostic services. According to the Energy Information Administration's (EIA) Annual Energy Outlook, 2005 projected first-year energy savings for households weatherized during this year are estimated to be $440, reflecting revised assumptions about future natural gas prices. For every $1 spent, the WAP returns $2.83 in energy and non-energy benefits over the life of the weatherized home, based on these same EIA long-term energy prices outlook and studies conducted by the Oak Ridge National Laboratory. These savings occur for several years into the future. Since the program's inception, more than 5.5 million homes have been weatherized using Federal, State, utility and other monies.

As we all know, these are troubling times facing our Nation—war, budget deficits, homeland security needs, and a slowed economic recovery. These times create added financial burdens for all Americans, but especially for those who live at or below the poverty line. Low-income families have always spent a disproportionate share of their income for energy needs than their middle-income counterparts. For example, a typical middle class family pays about 5 percent of their annual income for energy costs (heat, lights, air conditioning, appliances and hot water). Low-income families pay nearly the same dollar amount each year for energy but this amount represents a significantly higher percentage of their total household income (16 to 20 percent). In times of energy shortages and escalating energy costs, the energy burden for these families can reach 25 to 40 percent or more of their available income.

When energy costs rise, like they have during the 2005–2006 heating season, even a nominal increase can have a dramatic negative impact on low-income families.

The expected increase in this year's energy costs may amount to an additional $600 or more for most families. For middle-income families, this increase will amount to less than one-half of 1 percent of the total household income. For many low-income families; however, this increase will result in a 4 to 5 percent reduction in their expendable income and will cause families to go without other important essentials like food, medicine, or clothing to meet this higher financial demand.

These families need long-term solutions to help them reduce their energy use both now and in the future—resulting in lower energy bills. That is the primary mission of the Weatherization Assistance Program—"To reduce heating and cooling costs for low-income families, particularly for the elderly, people with disabilities, and children, by improving the energy efficiency of their homes while ensuring their health and safety."

The Oak Ridge National Laboratory reports entitled State Level Evaluations of the Weatherization Program Conducted From 1990–2001 found that the WAP significantly improved its energy savings results during those years. In 1996, the program showed savings of 33.5 percent of gas used for space heating—up from 18.3 percent savings in 1989. The increase in savings was based in large part on the introduction and use of more sophisticated diagnostic tools and audits. Families receiving weatherization services can reduce their heating energy use by an average of 22 percent, making the cost for heating their homes more affordable. The Evaluation report also concluded that the WAP possessed a favorable cost-benefit ratio. Simply stated, the Federal funds provided to support the program have a 140 percent return on investment, or nearly $2.83 in benefits for every $1 invested. Meta-evaluations in 1999 and 2001 confirmed the high level of energy saving potential for the WAP.

The WAP has always served as a testing ground and provides a fertile field for the deployment of research conducted by national laboratories. For example, the Oak Ridge National Laboratory developed the National Energy Audit (NEAT) for use by local agencies in assessing cost effectiveness of service delivery. Oak Ridge is currently investigating the cost effectiveness of including certain base load measures (water heater replacement, lighting, small motor efficiency, refrigerator replacements) into the program and continues to test other protocols and material installation techniques to help State and local agencies improve their field operations. The Florida Solar Energy Center and the State of Hawaii are working on the development of cost effective solar hot water heaters. Many of our States have implemented refrigerator replacement programs to decrease energy base-load for low-income families.

One of the major outcomes of WAP field deployment is that the private sector eventually adopts these new technologies. This pattern has been established through several advancements including blower door-directed air infiltration, duct system testing and sealing, furnace efficiency standards, and insulation and ventilation protocols. The acceptance of these standards and protocols by the private sector is enormously important as builders attempt to construct new properties or rehabilitate existing ones using a renewed energy efficiency philosophy.

Of equal importance to the technological and programmatic foundation are the WAP contributions in achieving overall national energy policies and social strategies. Some examples of how the program helps achieve these goals include:

—Reducing harmful green house gas through reduced CO_2 emissions by avoiding energy production. Each time a house is weatherized, the reduction in energy needs reduces the environmental impact associated with creating that energy reduction of sulfur dioxide, carbon, and other pollutants spilled into the atmosphere from the burning of fossil fuels like oil, coal, kerosene, wood, gas, and propane.

—Increasing jobs in communities throughout the country. For every $1 million invested in the WAP, more than 40 full-time jobs are created and supported in the States. Another 20 jobs are created in companies who provide goods and services to the program.

—Investing money into communities through job creation, local purchasing of goods and services, and tax revenues. These investments result in many secondary benefits. These residual benefits, known as "economic benefit multipliers," are applied to local community investment to value the real worth of money used locally. This multiplier is 3.5 to 4 times the actual investment. This means that an investment of $275 million in the WAP could yield nearly $1.1 billion in economic benefits to local communities.

—Reducing consumption of imported fuels by reducing residential energy consumption. Our country currently imports nearly 60 percent of its oil from foreign countries. This figure is higher than the import percentage in the 1970's, when the oil embargo threatened our ability to operate as a Nation. The con-

servation efforts of the WAP network will help reduce our country's dependency on foreign oil, thereby strengthening our country's national security.

In 2001, the administration earmarked the WAP as a "Presidential Priority" in its National Energy Policy Plan. President Bush committed $1.4 billion to be added to WAP over a 10-year period to help thousands of low-income families meet their energy needs while reducing their energy burden. Each year since then, the administration has asked for higher appropriations levels in their budgets submitted to Congress. In response to these higher budget requests, Congress voted to fund the WAP in 2006 at $242.5 million—$15 million more than the President's request. In a complete reversal of the President's long-standing commitment to the program, the administration has significantly reduced its 2007 request to $164.2 million, or a 33 percent reduction. We are writing to urge your subcommittee to restore funding for the Low Income Weatherization Assistance Program to levels no less than $275 million for WAP and $74 million for State Energy Programs (SEP) for fiscal year 2007.

Weatherization is a clearly proven investment which has helped over 5.5 million families live in safer, more comfortable living conditions. If the President's budget is upheld, 33,000 low-income families will be denied critical weatherization services this year. With this funding, these families would have saved an average of $440 or more a year on energy. This money could have been used for essential needs such as food, clothing, and medicine. Instead, these low-income households will have to spend more than $200 million from their meager incomes to pay for energy that could have been saved if the homes were weatherized in 2007. At a time when oil and natural gas prices remain high and low-income families are facing huge increases in their energy costs, it is irresponsible for the administration to place added burdens on these families by choosing not to help them conserve energy.

NASCSP is also concerned about the low level of funding provided for the State Energy Programs (SEP) in 2006. SEP enjoys a broad constituency, supporting State energy efficiency programs that include energy generation, fuels diversity, energy use in economic development, and promoting more efficient uses of traditional energy resources. SEP funding has fallen steadily from a recent high in 1995 of $53 million to its fiscal year 2006 level of $36 million. The State energy offices are the crucial centers for organizing energy emergency preparedness. They have been asked to do much new work in the sensitive area of infrastructure security. Taking into consideration this growing burden, the increasing difficulty of managing energy resources, together with increasing opportunities for States to implement cost-saving measures, we are supporting their request of $74 million for fiscal year 2007. This level would restore the program's recent funding cuts, enhance their ability to address energy emergency preparedness, and allow for inflationary impacts since 1995.

By the evidence provided herein, this committee can be assured that the funding invested in WAP and SEP will provide essential services to thousands of low-income families, resulting in greater energy savings, more economic investments, increased leveraging of other funds, and less reliance on high-cost, foreign oil—outcomes that will benefit the Nation. NASCSP looks forward to working with committee members in the future as we attempt to create energy self-sufficiency for millions of American families through these invaluable national programs.

PREPARED STATEMENT OF THE UF-DOE HIGH TEMPERATURE ELECTROCHEMISTRY CENTER, UNIVERSITY OF FLORIDA

Chairman and members of the subcommittee, our quality of life, standard of living, and national security depend on energy. The limited supply of fossil energy, its accelerated consumption, and the dependence on its supply from unstable Middle East countries are major U.S. economic and security issues. To address these issues we must have a strong balanced energy research program, which is based on the best use of our indigenous natural resources while minimizing our dependence on imported energy forms. Therefore, our testimony is directed to programs in the Office of Fossil Energy of the U.S. Department of Energy. Specifically we request that the High Temperature Electrochemistry Center (HiTEC) be funded at the fiscal year 2006 level of $8 million (including $750,000 at the University of Florida), and that the Solid State Energy Conversion Alliance (SECA) be funded at $67 million for a total SECA-HiTEC appropriation within the Office of Fossil Energy, Research and Development, Fuels and Power Systems of $75 million.

HiTEC.—The High Temperature Electrochemistry Center (HiTEC) is part of the Research and Development Program and provides the research necessary to develop enabling technologies for advanced power generation systems, including the Presi-

dent's FutureGen, Clean Coal, and Hydrogen programs. HiTEC not only supports DOE's mission, but through the HiTEC Satellite Centers at Montana State University, the University of Florida, and other U.S. universities, creates concentrated centers of excellence where the fundamental research necessary to meet U.S. energy needs are addressed.

As an example, at the University of Florida we are developing the fundamental understanding of ionic transport in, and electrocatalytic (electrochemical catalysis) phenomena on the surface of, ion conducting materials. From first-principles calculations and molecular dynamic simulations of ionic transport and gas-solid interactions to synthesis and characterization (structural, electrochemical, and catalytic) of novel ion conducting materials and electrocatalysts. The results of these investigations will minimize the polarization losses of fuel cells and batteries, maximize the hydrogen production from gas separation membranes, and enhance the signal and selectivity of exhaust sensors. In so doing this research will improve U.S. energy efficiency and security.

A further benefit of this university-based research program is that it provides for the education of the next generation of energy scientists and engineers necessary to meet the employment needs of this growth industry. As such, this university-based energy research program is directly aligned with the goals of the President's "American Competitiveness Initiative," the pending Senate legislation "Protecting America's Competitive Edge Acts," and the National Academy's "Gathering Storm" report.

Therefore, we recommend continuation of this program at the fiscal year 2006 level of $8 million including $750,000 at the HiTEC center at the University of Florida.

SECA.—Solid State Energy Conversion Alliance (SECA) is the DOE Fossil fuel cell program. Fuel cells are a critical technology for efficient utilization of our natural resources. What distinguishes the SECA program from the Office of Energy Efficiency's fuel cell program is the fuel flexibility of the type of fuel cell being developed by SECA. Not only can these fuel cells contribute to a future Hydrogen Economy, but unlike other fuel cells, they can operate using conventional fuels (from natural gas to coal derived gasses, to gasoline and diesel fuels) as well as renewable biomass based fuels. Thus, development and deployment of the SECA fuel cells can improve U.S. energy efficiency and security utilizing our current energy infrastructure.

The SECA program is a successful DOE-industry-university partnership involving 6 industry teams, 20 universities and 4 national labs. This program is achieving its milestones and goals and as such will see market entry in the next few years providing near term U.S. energy efficiency gains. However, in order to deploy pre-commercial prototypes a funding increase for the SECA program in fiscal year 2007 to $67 million is necessary.

Thank you for the opportunity to offer testimony on these important programs. We appreciate the support of the subcommittee.

PREPARED STATEMENT OF THE COALITION OF NORTHEASTERN GOVERNORS

WEATHERIZATION ASSISTANCE PROGRAM, NORTHEAST HOME HEATING OIL RESERVE, AND REGIONAL BIOMASS ENERGY PROGRAM

The Coalition of Northeastern Governors (CONEG) is pleased to provide this testimony to the Senate Subcommittee on Energy and Water, and Related Agencies regarding fiscal year 2007 appropriations for Energy Conservation and Renewable Energy programs of the U.S. Department of Energy. The Governors recognize the difficult funding decisions which confront the subcommittee this year and appreciate the subcommittee's support for these programs.

At a time of record high energy prices and heightened attention to the security, reliability and efficiency of the Nation's energy systems, these conservation and renewable energy programs have taken on an increased significance. Modest Federal investment in these programs provides substantial energy, economic and environmental returns to the Nation—leveraging additional State and private sector investment and contributing to sound energy management. To continue the contribution of these programs to cost-effective energy strategies, the CONEG Governors request that funding for the State Energy Program be increased to $49.5 million, and that funding for the Weatherization Assistance Program be provided at a level of at least $250 million in fiscal year 2007. The Governors support the President's request that funding for the Northeast Home Heating Oil Reserve be provided at a level of $4.95 million in fiscal year 2007. The Governors also request that the subcommittee pro-

vide $7.5 million to continue the National Biomass Partnership (previously known as the Regional Biomass Energy Program).

Administered by the 50 States, District of Columbia and territories, the Department of Energy's State Energy Program and Weatherization Assistance Program are a cost-effective way to achieve national energy goals. The National Biomass Partnership helps sustain public and private sector investment in biomass technologies and contributes to expanded biomass energy development. These programs provide valuable opportunities for the States, industry, national laboratories and the U.S. Department of Energy to collaborate in moving energy efficiency and renewable energy research, technologies, practices and information to the public and into the marketplace.

State Energy Program.—The State Energy Program (SEP) is the major State-Federal partnership program addressing energy efficiency and conservation in all sectors of the economy. Cost-shared by the States, the program allows State energy offices to increase the effectiveness of the Federal funds by tailoring the energy activities to address particular local energy priorities and opportunities.

Increased SEP funding in fiscal year 2007 will ensure that States can continue their work toward the national energy goal of a balanced, reliable and secure energy system. SEP provides the vital funds that allow State energy offices to move energy efficiency and renewable energy technology into the marketplace, assist both the private and public sectors in reducing energy use and costs, and conduct extensive public information activities. Increased SEP funding will also ensure that States can rely on their State energy offices to continue vital emergency preparedness activities.

The modest Federal funds provided to the SEP are an efficient Federal investment, as they are leveraged by non-Federal public and private sources. According to a recent study of the SEP done by the Oak Ridge National Laboratory at the request of U.S. Department of Energy, every dollar in SEP funding results in $7.22 in annual energy cost savings and also yields $10.71 in "leveraged" funding from the State and private sectors. SEP projects have resulted in more than $333 million in annual energy costs savings.

Weatherization Assistance Program.—Through a network of partnerships with more than 970 local weatherization agencies across the country, the Weatherization Assistance Program (WAP) improves the energy efficiency of more than 100,000 low-income dwellings a year, thereby reducing the heating and cooling bills of the Nation's most vulnerable citizens. According to the U.S. Department of Energy, low-income households spend more than 15 percent of their annual income on energy, compared to 3.5 percent for other households. The Weatherization Assistance Program strives to reduce this "energy burden" of low-income residents through such on-going energy saving measures as the installation of insulation and energy-efficient lighting, and heating and cooling system tune-ups. These measures can result in energy savings as high as 30 percent. According to the National Association for State Community Service Programs, based on current energy prices, the average family saves approximately $400 per year after weatherization services are provided.

The WAP also provides numerous non-energy benefits. Oak Ridge National Laboratory has concluded that for every $1 of DOE investment, there are non-energy benefits worth $1.88. For instance, the WAP generates more than 8,000 jobs nationwide, creating 52 new jobs for every $1 million invested. In addition, the decreased energy use resulting from weatherization measures also provides environmental benefits through decreased carbon dioxide emissions.

National Biomass Partnership.—Renewable energy plays an increasingly vital role in meeting the Nation's goal of reduced reliance on imported fossil fuels. Some of the most promising renewable technologies use biomass to achieve that goal. The National Biomass Partnership (formerly known as the Regional Biomass Energy Program) is a primary link among State, private, and Federal biomass activities. It is a vital complement to the research and technology work of the Department of Energy and its national laboratories, and can assist Federal agencies in carrying out the biomass provisions in EPAct 2005 and the President's Advance Energy Initiative. The activities are tailored to the specific resources and opportunities in each region of the country, thus providing a critical link in the chain of research, resource production and technology commercialization. The Partnership has been successful in promoting the adoption of State policies that encourage development of biomass resources, increasing public awareness of the benefits and uses of bioenergy; leveraging Federal funding and State resources, and increasing the intensity of biomass use. In the Northeast, the Partnership has been instrumental in stimulating an estimated $24 million in public and private investment in bioenergy development; offering technical assistance that contributed to new bioenergy and biopower

development policies in six States; and providing educational assistance to increase public and private sector awareness of the potential of regional biomass development. As a result, the Northeast has seen an increase in development plans for new ethanol and biodiesel production facilities and biomass power capacity, as well as a growth in demand for ethanol.

The Partnership is a recognized source of objective and reliable information on biomass. It is also a valued resource for States in their efforts to expand the use of biodiesel in transportation and heating oil and in promoting appropriate use of biomass for expanded electric power and combined heat and power applications. These biomass applications are important to the Northeast's near term goals of increased renewable energy use and voluntary programs to reduce greenhouse gases.

Northeast Home Heating Oil Reserve.—The Nation's heightened emphasis on energy security places renewed importance on the Northeast Home Heating Oil Reserve. The Northeast, with its reliance upon imported fuels for both residential and commercial heating, is particularly vulnerable to the effects of supply disruptions and price volatility. The Reserve provides an important buffer to ensure that the States will have prompt access to immediate supplies in the event of a supply emergency.

In conclusion, we request that the subcommittee provide funding in fiscal year 2007 for the State Energy Program at the President's requested level of $49.5 million; provide $250 million for the Weatherization Assistance Program; provide $7.5 million for the National Biomass Partnership; and provide funding at the President's requested level of $4.95 million for the Northeast Home Heating Oil Reserve. These programs have demonstrated their effectiveness in contributing to the Nation's goals of environmentally sound energy management and improved economic productivity and energy security.

We thank the subcommittee for this opportunity to share the views of the Coalition of Northeastern Governors, and we stand ready to provide you with any additional information on the importance of these programs to the Northeast.

PREPARED STATEMENT OF THE BIOMASS ENERGY RESEARCH ASSOCIATION

SUMMARY

This testimony pertains to the fiscal year 2007 appropriations for biomass energy research, development, and demonstration (RD&D) conducted by the Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy (EERE). This mission-oriented biomass RD&D is funded by the Energy and Water Development bill, and is performed under the heading of Energy Supply and Conservation, Energy Efficiency and Renewable Energy. BERA recommends a total appropriation of $150,000,000 in fiscal year 2007 under Biomass and Biorefinery Systems R&D (Energy Supply and Energy Conservation), exclusive of earmarks. Specific lines items for the DOE biomass RD&D budget are as follows:

—$60,000,000 for Biochemical Conversion Platform Technology (conversion of corn starch, corn stover and fiber, wood, forest residues and perennial crops);
—$50,000,000 for Thermochemical Conversion Platform Technology (conversion of wood and forest resources to pyrolysis oils and syngas);
—$25,000,000 for Integrated Biorefinery Technologies; and,
—$15,000,000 for Utilization of Platform Outputs: Core Technologies for Chemicals.

BACKGROUND

On behalf of BERA's members, we would like to thank you, Mr. Chairman, for the opportunity to present the recommendations of BERA's Board of Directors for the high-priority programs that we strongly urge be continued or started. BERA is a non-profit association based in the Washington, DC area. It was founded in 1982 by researchers and private organizations conducting biomass research. Our objectives are to promote education and research on the economic production of energy and fuels from freshly harvested and waste biomass, and to serve as a source of information on biomass RD&D policies and programs. BERA does not solicit or accept Federal funding for R&D.

There is a growing realization in our country that we need to diversify our energy resources, develop technologies to utilize indigenous fuels, and reduce reliance on foreign oil. Economic growth is fueling increasing energy demand and placing considerable pressure on our already burdened energy supplies and environment. The import of oil and other fuels into the United States is growing steadily and shows no sign of abating. Industry and consumers both are being faced with rapidly rising

costs for fossil fuels, which are vital to our economy. A diversified energy supply will be critical to meeting the energy challenges of the future and maintaining a healthy economy with a competitive edge in global markets.

Biomass is the single renewable resource with the ability to replace liquid transportation fuels. It can also be used as a feedstock to supplement the production of chemicals, plastics, and other materials that are now produced from crude oil. In addition, gasification of biomass or biomass-derived pyrolysis oils produces a syngas that can be utilized to supplement the natural gas supply and electricity from fossil fuels. Viable fuel and chemical products are already being produced from biomass, but on a very small scale compared to the potential fuel markets. Research should be expanded to realize the full potential of biomass as a component of our energy supply.

The Energy Policy Act of 2005 has created various incentives for diversifying our energy supply. The Act provides a good foundation, but to be effective it must be supported by research that will enable the United States to take advantage of our abundant, domestic, renewable resources in a cost-effective way. The recently announced Biofuels Initiative provides for additional funding to support the use of cellulosic biomass as a feedstock for ethanol, with the potential to replace as much as 30 percent of domestic gasoline demand in 2030. We support this Initiative and believe it will help to accelerate the development and utilization of this important resource.

BERA RECOMMENDATIONS FOR DOE BIOMASS RD&D

BERA's recommendations support a balanced program of mission-oriented RD&D, including projects to develop and demonstrate advanced biochemical and thermochemical biomass conversion processes, alternative liquid transportation fuels, and co-production of fuels, chemicals, and power in integrated biorefineries. BERA's recommendations for funding for DOE biomass RD&D are shown in Table 1 and outlined below. Note that recommended budgets for demonstration projects do not include the required 50 percent industry cost-share.

Fund both biochemical and thermochemical conversion platforms as foundations for integrated biorefineries.—The biochemical and thermochemical platforms are both important and BERA urges that both be funded to accelerate the development and demonstration of large-scale, synergistic integrated biorefinery systems. These large-scale systems have the most potential to enable biomass to have a major role in displacing fossil fuels. BERA urges that biochemical conversion research be funded at the DOE request, and that thermochemical conversion R&D for biomass gasification, pyrolysis, and synthesis of alternate liquid fuels be expanded and given a higher priority.

Support development/demonstration of integrated biorefineries.—Activities should address integration of promising biological and thermochemical process steps and processes to improve overall process efficiency and reduce product cost, taking into consideration siting, plant design, financing, permitting, environmental controls, waste processing and disposal, and sustained operations; feedstock acquisition, transport, storage, and delivery; and storage and delivery of products to market. BERA recommends that industrial partners and States should be carefully selected to demonstration mission-oriented benefits for participation in this cost-shared program.

Reduce level of earmarks.—The level of earmarks in the last few years has resulted in limiting new initiatives and premature reductions of scheduled programs by EERE. BERA respectfully asks the subcommittee to carefully consider the impacts of all earmarks on EERE's biomass energy RD&D. If earmarks are slated for projects that do not contribute to DOE's research goals, BERA urges that they be add-ons to the baseline funds rather than deductions.

TABLE 1.—BIOMASS/BIOREFINERY SYSTEMS R&D (ENERGY SUPPLY)

Program Area	Description of RD&D	Research	Scale-Up & Demonstration	All RD&D
Biochemical Conversion Platform R&D.	Conversion of corn starch, stover and fiber, wood and forest residues, and perennial crops.	$30,000,000	$30,000,000	$60,000,000
Thermochemical Conversion Platform R&D.	Conversion of wood and forest residues to pyrolysis oils or syngas.	20,000,000	20,000,000	40,000,000

TABLE 1.—BIOMASS/BIOREFINERY SYSTEMS R&D (ENERGY SUPPLY)—Continued

Program Area	Description of RD&D	Research	Scale-Up & Demonstration	All RD&D
Integration of Biorefinery Technologies.	Validation of benefits of integrating biochemical and thermochemical conversion technologies in integrated biorefineries.	.....	15,000,000	15,000,000
Utilization of Platform Outputs: Core Technologies for Fuels, Chemicals, and Electricity.	Development and co-production of fuels, chemicals and electricity from biochemical and thermochemical platform output streams.	15,000,000	.....	15,000,000
State and Regional Biomass Partnerships.	Outreach and support for regional bioenergy projects.	.....	5,000,000	5,000,000
TOTAL	.....	72,000,000	78,000,000	150,000,000

Build U.S. leadership in biomass science and technology through mission-oriented bioenergy research.—BERA recommends that at least 50 percent of the Federal funds appropriated for biomass research, excluding the funds for scale-up projects, are used to sustain a national biomass science and technology base via sub-contracts for industry and universities. While the national laboratories should facilitate coordinating this research, increased support for U.S. scientists and engineers in industry, academe, and research institutes will encourage commercialization of emerging technologies and serious consideration of new ideas. It will also help to build the skilled workforce, scientific community, and state-of-the-art research platforms needed to support a future domestic bioenergy industry.

Utilization of platform outputs R&D, core technologies for fuels, chemicals and electricity.—In the past EERE has focused on competitive selection of R&D projects based on an analytical effort that identified the top 12 building block chemicals that can be produced from sugar intermediates via biological or chemical conversions. BERA urges that this effort focus instead on efficient and economical production of liquid fuels and commodity organic chemicals, which have established markets, rather than high-value chemicals, which are either new products without established markets or specialty chemicals with niche markets. Biomass-derived fuels and chemicals, with the ability to co-produce electricity, will have a greater probability of reducing fossil fuels consumption. BERA urges that this effort include continuing research on sugar intermediates and be expanded to include direct conversion of other intermediates and biomass to fuels and commodity organic chemicals.

State and Regional Partnerships (Formerly Regional Biomass Energy Program).—The State & Regional Partnerships (SRP) was created to succeed the Regional Biomass Energy Program (RBEP) which functioned as a biomass outreach program for 20 years. The SRP serves an important function at the State level in promoting the use of biomass fuels. BERA strongly urges that the SRP be continued in fiscal year 2007.

BIOMASS AND BIOPRODUCTS INITIATIVE

The goal of the Biomass and Bioproducts Initiative (BBI), created through "The Biomass Research and Development Act of 2000" and Title IX of the Farm Bill, was to triple the use of bioenergy and biobased products. Congress has provided annual funding for the BBI since fiscal year 2000. BERA strongly urges that the BBI be continued in fiscal year 2007 at the funding levels recommended by BERA for the cost-shared demonstration projects shown in Table 1.

BERA congratulates DOE and USDA for the cooperation and joint coordination of the programs of each department to increase the use of biomass for production of affordable fuels, electricity, and products. To meet accelerated goals for biofuels, the BBI must be fully incorporated into DOE's and USDA's biomass research programs. Large, strategically located, energy plantations are ultimately envisaged in which waste biomass and harvested biomass production systems are integrated with biorefineries and operated as analogs of petroleum refineries to afford flexible slates of multiple products from multiple feedstocks and to co-produce electricity.

BERA also recommends that implementation of the BBI should include identification of each Federal agency that provides funding related to biomass energy development and their programs and expenditures, as is done by DOE and USDA. This on-going activity should be expanded to include other Federal agencies and organi-

zations (e.g., Environmental Protection Agency, Department of Transportation, Department of Commerce, National Science Foundation) to help fine-tune the critical pathways to program goals, to coordinate R&D efforts, and to maximize the return on RD&D investment.

PREPARED STATEMENT OF FLORIDA STATE UNIVERSITY

Summary of Request.—Electric Power Infrastructure—Security Research & Development; *Agency*.—Energy and Water (Dept. of Energy); *Program*.—Electricity Transmission and Distribution; *Fiscal Year 2007 Request*.—$3,500,000. We respectfully request the committee consider directing DOE to continue the funding committed to scientists already working on DOE-funded projects in the Ocean Carbon Sequestration Program administered by the Office of Biological and Environmental Research.

Mr. Chairman, I would like to thank you and the members of the subcommittee for this opportunity to present testimony before this committee. I would like to begin by strongly endorsing the President's fiscal year 2007 budget proposal that focused on substantial increases in research funding for the Department of Energy's Office of Science. The research funding provided by that Office for the physical sciences and engineering is critical to our Nation's future. The approximately 14 percent increase proposed by the President as part of his American Competitiveness Initiative is sorely needed by the research community as an investment in our future security. It is our hope that this subcommittee could support this effort in your fiscal year 2007 budget plan.

Next, I would like to take a moment to briefly acquaint you with Florida State University. Located in Tallahassee, Florida's capitol, FSU is a comprehensive Research I university with a rapidly growing research base. The University serves as a center for advanced graduate and professional studies, exemplary research, and top-quality undergraduate programs. Faculty members at FSU maintain a strong commitment to quality in teaching, to performance of research and creative activities, and have a strong commitment to public service. Among the current or former faculty are numerous recipients of national and international honors including Nobel laureates, Pulitzer Prize winners, and several members of the National Academy of Sciences. Our scientists and engineers do excellent research, have strong interdisciplinary interests, and often work closely with industrial partners in the commercialization of the results of their research. Florida State University had over $182 million this past year in research awards.

Florida State University attracts students from every State in the Nation and more than 100 foreign countries. The University is committed to high admission standards that ensure quality in its student body, which currently includes National Merit and National Achievement Scholars, as well as students with superior creative talent. We consistently rank in the top 25 among U.S. colleges and universities in attracting National Merit Scholars to our campus.

At Florida State University, we are very proud of our successes as well as our emerging reputation as one of the Nation's top public research universities.

Mr. Chairman, let me tell you about our primary interests today.

Recent large-scale failures in the electrical grid systems of North America and Europe have made us aware of the critical nature of our dependence on the availability of electrical power. A contributing factor to these failures was a lack of detailed understanding of the system dynamics in response to an initial minor disturbance. Lack of investment in power systems grids over the last 20–30 years has eroded the redundancy traditionally built into the system by allowing load increases without an equivalent growth in the supporting transmission network, control sophistication or distributed generation capability. Over the same time, the lack of investment in R&D resulted the closure of many power engineering educational programs. Authoritative estimates suggest that in 2002 only 500 bachelor's degrees in power engineering were awarded in the United States.

The proposed research activities within this System-wide project will build on existing expertise at FSU, other universities within Florida, and several of Department of Energy's National Laboratories. The research will focus specifically on critical issues associated with bringing modernization to the U.S. electric grid. Many of the projects will have industrial partners, thereby ensuring rapid technology transfer from research-to-practice. These activities include:

—Employing the real time digital simulator capability—present and future—at FSU/CAPS to be able to simulate the real-time behavior of a portion of a regional grid and its interconnections to better understand the areas of vulnerability for major outages and cascading failures. It is envisioned that this will

become a national user facility with remote access capability over high-speed connections.

—Use of the real-time digital simulator through comparisons of concurrent real time modeling and an actual system to assess new technologies, including energy storage, intelligent agent based controls, operating procedures, improved analytical and simulation techniques, and security assessment of SCADA systems.

—Advanced materials R&D for superconductivity applications in power systems. Some of the areas of research include the characterization of the engineering behavior of superconducting conductors, and development of advanced insulation materials specifically geared for low-temperature environments.

In a second area of interest, you are probably aware that industrial by-products have increased the concentration of carbon dioxide in the atmosphere from 290 to 380 parts per meter over time. This increase has been implicated in the rise of global temperature because carbon dioxide interferes with the re-radiation of solar energy back into space. One way to reduce the rate of increase of carbon dioxide in the atmosphere is to collect it from industrial sources and store it, for example, in the deep ocean (Intergovernmental Panel on Climate Change, 2006). The wisdom of this option is unclear because little is known about the environmental consequences. The United States Department of Energy (DOE) has been funding research to fill this knowledge gap. In one case, DOE funded an initial 3-year grant and a 3-year renewal for a cooperative effort between Louisiana State University and Florida State University. This team is assessing the sensitivity of deep-sea animals to carbon dioxide-rich seawater; is studying the seafloor area that would be exposed to carbon dioxide-rich seawater during full-scale ocean storage and to assess the risk extinction; and is investigating its effects of carbon dioxide-rich seawater on similar species that live in shallow water, which are easier and cheaper to study.

The DOE fiscal year 2007 Congressional Budget Request eliminates funding for the Ocean Carbon Sequestration Program administered by the Office of Biological and Environmental Research, which supports the research. Many of the benefits from DOE's investment in this important area of research will be lost if funding is terminated. We respectfully request the committee consider directing DOE to continue the funding committed to scientists already working on DOE-funded projects in this area.

Mr. Chairman, we believe this research is vitally important to our country and would appreciate your support.

PREPARED STATEMENT OF THE UNIVERSITY CORPORATION FOR ATMOSPHERIC RESEARCH

On behalf of the University Corporation for Atmospheric Research (UCAR) and the university community involved in weather and climate research and related education, training and support activities, I submit this written testimony for the record of the Senate Committee on Appropriations, Subcommittee on Energy and Water Development.

UCAR is a 69-university member consortium that manages and operates the National Center for Atmospheric Research (NCAR) and additional programs that support and extend the country's scientific research and education capabilities. In addition to its member research universities, UCAR has formal relationships with approximately 100 additional undergraduate and graduate schools including several historically black and minority-serving institutions, and 40 international universities and laboratories. UCAR's principal support is from the National Science Foundation with additional support from other Federal agencies including the Department of Energy (DOE).

DOE OFFICE OF SCIENCE

The atmospheric and related sciences community appreciates Congress' support for the DOE Office of Science, and enthusiastically supports the inclusion of the DOE Office of Science in the American Competitiveness Initiative within the President's budget request for fiscal year 2007. The needs of the country demand that DOE continue to produce a world-class program in science and energy security research. The Office of Science manages fundamental research programs in basic energy sciences, biological and environmental sciences, and computational science, and supports unique and vital parts of U.S. research in climate change, geophysics, genomics, life sciences, and science education. The prospect of halting the recent slide in research funding within DOE and actually doubling the agency's research

budget holds great promise for DOE's investment in and contribution to our Nation's future.

I urge the subcommittee to fund the DOE Office of Science at the level of the President's fiscal year 2007 budget request, or $4.1 billion, and to enable the agency to apply that entire amount toward planned agency research priorities. This level of research funding will augment and reinvigorate critical work of researchers throughout the Nation.

Biological and Environmental Research (BER)

Within the Office of Science, the Biological and Environmental Research (BER) program develops the knowledge necessary to identify, understand, and anticipate the potential health and environmental consequences of energy production and use. These are issues that are absolutely critical to our country's well-being and security. The President's BER request for fiscal year 2007 is $510.3 million, an approximate increase of $60.5 million over fiscal year 2006 funding when fiscal year 2006 congressionally directed programs are removed. While this is a healthy increase, it should be seen in the context of past appropriations and the decline of BER funding that has taken place over the past several years. The fiscal year 2005 final appropriation for BER was $502.0 million with add-ons subtracted. The fiscal year 2007 request therefore makes up much ground lost recently, but does not get BER back to level funding when inflation is factored in.

Peer-reviewed research programs at universities, national laboratories, and private institutions play a critical role in the BER program by involving the best researchers the Nation has to offer, and by developing the next generation of researchers. Approximately 27 percent of BER basic research funding supports university-based activities directly and 40 percent supports basic research at national laboratories. All BER research projects, other than those in the "extra projects" category, undergo regular peer review and evaluation. I urge the subcommittee to fund Biological and Environmental Research at the level of the fiscal year 2007 budget request, or $510.3 million, and to enable BER to apply that entire amount toward planned agency research priorities that are peer-reviewed and that involve the best researchers to be found within the Nation's university research community as well as the DOE labs.

Climate Change Research.—Within BER, the Climate Change Research contributes substantially to the Nation's Climate Change Research Initiative (CCRI) goals of understanding and predicting climate change, including its causes and consequences. The long-term DOE goal is to deliver improved climate data and models for policy makers and to substantially reduce differences between observed temperature and model simulations at regional scales. This work is critical to the ability of policy makers and stakeholders to provide stewardship resulting in a healthy planet—and it is particularly important as signs of increasingly dramatic change in our climate and environment appear. The Climate Change Research Request of $134.9 million is a 4.6 percent decrease from the fiscal year 2006 appropriated level at a time when the request for BER is up 13.4 percent after congressionally directed projects are removed. I urge the subcommittee to fund Climate Change Research at an fiscal year 2007 level that is consistent with the request for BER stated above, and to enable DOE to apply the entire amount toward planned national research priorities.

Advanced Scientific Computing Research (ASCR)

Within DOE's Office of Science, the Advanced Scientific Computing Research program delivers leading edge computational and networking capabilities to scientists nationwide enabling advances in computer science and the development of specialized software tools that are necessary to research the major scientific questions being addressed by the Office of Science. Development of this capacity is a key component of DOE's strategy to succeed in its science, energy, environmental quality, and national security missions.

ASCR's continued progress is of particular importance to atmospheric scientists involved with complex climate model development, research that takes enormous amounts of computing power. By their very nature, problems dealing with the interaction of the earth's systems and global climate change cannot be solved by traditional laboratory approaches. The Intergovernmental Panel on Climate Change (IPCC) is compiling its Fourth Assessment Report to be completed in 2007, and ASCR's contribution to this international document is critical. Therefore, it is encouraging to see the increase for ASCR in the President's request for fiscal year 2007. I urge the committee to support the President's fiscal year 2007 request of $318.6 million for DOE Advanced Scientific Computing Research, and to enable DOE to apply the entire amount toward planned national priorities.

Within ASCR, two programs are of particular importance to climate change computer modeling work: the National Energy Research Scientific Computing Center (NERSC) operated by Lawrence Berkeley National Laboratory, and the Energy Sciences Network (ESnet). NERSC is the high performance production computing facility for the Office of Science, serving thousands of scientists throughout the country at laboratories, universities, and other Federal agencies. Computing time is awarded to research groups based on peer review of submitted proposals. NERSC represents an important element of the administration's American Competitiveness Initiative strategy as outlined in the President's State of the Union address referencing the doubling of "the federal commitment to the most basic research programs in the physical sciences over the next ten years. This funding will support the work of America's most creative minds as they explore promising areas such as nanotechnology, supercomputing, and alternative energy sources."

ESnet enables researchers at laboratories, universities and other institutions to communicate with each other using collaborative capabilities that are unparalleled. This high-speed network enables geographically distributed research teams to collaborate effectively on some of the world's most complex problems. Researchers from industry, academia and national labs, through this program, share access to unique DOE research facilities, support the frequent interactions needed to address complex problems, and speed up discovery and innovation. The fiscal year 2007 budget request will enable DOE to deliver a network with two to four times the capability of today's ESnet.

NERSC and ESnet play complementary roles in advancing the complex and challenging science of climate change and other scientific areas of extreme importance to the security and quality of life of our citizens. I urge the committee to support the President's fiscal year 2007 requests of $54.79 million for the National Energy Research Scientific Computing Center (NERSC), and $22.7 million for the Energy Sciences Network (ESnet).

DOE plays a vital role in sustaining U.S. scientific leadership and generating U.S. competitiveness in a time when other countries are investing heavily in scientific research and technology. On behalf of UCAR and the atmospheric sciences research community, I want to thank the subcommittee in advance for your attention to the recommendations of our community concerning the fiscal year 2007 budget of the Department of Energy. We understand and appreciate that the Nation is undergoing significant budget pressures at this time, and support absolutely the effort to enhance U.S. security and quality of life through the American Competitiveness Initiative, of which the DOE Office of Science is a critical component.

PREPARED STATEMENT OF THE ASSOCIATION OF U.S. PETROLEUM ENGINEERING DEPARTMENT HEADS

We are a committee of Department Heads for Petroleum Engineering departments in the United States. We are writing to inform the committee of the drastic harm that will be done to Petroleum Engineering education in the United States unless the appropriation for oil and natural gas technologies programs in the fiscal year 2007 Department of Energy budget is restored to at least its fiscal year 2006 appropriated level of $64 million. This program provides the largest single source of funding for the research and graduate education in Departments of Petroleum Engineering and related disciplines throughout the United States. It directly benefits the Nation in improved recovery from domestic oil and natural gas fields, with a particular focus on providing research support for independents, who are without their own large research organizations. Beyond that, it directly benefits the education of both graduate and undergraduate students in Petroleum Engineering, and thereby helps provide the technical expertise that will be crucial as oil and natural gas supplies become more and more scarce and precious.

In all estimates made by the Energy Information Administration, oil and gas will serve as the major sources of energy to fuel our economy for the foreseeable future. Enhancing the domestic production requires innovative and advanced technologies to raise the recovery factor from the U.S. mature fields to well above 60 percent and to tap unconventional oil and gas resources. This is the only way we can buy the 50–75 years that it may take to realize economical access to the alternatives to oil and gas. Major oil companies, with their main focus on their international operations, are gradually pulling out of the U.S. oilfields and are not investing sufficiently in the university research needed to train the U.S. work force. Scientific training of the oil and gas work force is a task best done by the Petroleum Engineering departments in this country and requires the continuous support of the U.S. DOE.

One cannot maintain excellence in education at a research university without funding for research for faculty to refine their skills and for graduate-student education. No other program in the Federal Government provides support for the broad range of topics in Petroleum Engineering provided by this program. No other discipline in the sciences or engineering is expected to fund long-term research without help from the Federal Government. The loss of this DOE program would cripple Petroleum Engineering education throughout the United States.

The need to support Petroleum Engineering education in the United States is severe. The loss of Petroleum Engineering programs in the United States has become a critical problem. In 1986 there were more than 30 accredited Petroleum Engineering programs in the United States. Today the United States is left with only 18. In the mid-1980's, during the last oil-price rise, there were over 1,400 graduates per year in Petroleum Engineering; today there are only about 375 students graduating from Petroleum Engineering programs. The average age of petroleum engineers working in the United States is 52; the number of students we are graduating from our current programs is not enough to replace the retiring engineers, let alone expand the work force. This has led to a shortage of petroleum engineers and, hence, fierce competition among the oil companies. More important, unlike 1980's, when most of the oil companies who could hire other types of engineers and train them to be petroleum engineers through internal training programs, do not have those training programs. All companies coming on campus today prefer to hire petroleum engineers, hence the demand will continue to grow. Another key difference from 1980's is that unlike most of the oil companies that time, who actively had internal research programs, companies today have largely abandoned research activities to the universities and service companies. This has further increased the need for conducting both fundamental and applied research in Petroleum Engineering Departments. We need the support of DOE for fulfilling this role.

Most conventional oil and natural gas reserves have already been discovered. We are going to need more expertise and technology to explore and exploit the more challenging, unconventional resources that still exist, if we are to meet America's future energy needs. If these programs so vital to the training of the professionals that provide our energy needs are cut, the United States will be even more dependent on oil and natural gas supplied from overseas, much of it from unstable regions of the world.

The petroleum and natural gas industries have a multi-billion dollar impact on the U.S. economy, and over 400,000 U.S. citizens have good-paying jobs because of the petroleum industry. The demands for oil and natural gas continue to grow each year, with an expected annual increase of at least 2 percent in the foreseeable future. Large amounts of oil from mature or unexplored basins in the United States can be produced with improved technology that can be developed under the DOE oil and gas technologies program.

We urge you to support this important appropriation that will provide the citizens of this great country the needed access to the products and services that make the United States the most technologically advanced country in the world. We encourage you and your fellow Senators on the committee to restore the fiscal year 2007

appropriation for DOE oil and gas technologies programs to their fiscal year 2006 level of $64 million.

Respectfully,

DR. MOHAN KELKAR,
The University of Tulsa, on behalf of the Association of U.S. Petroleum Engineering Department Heads:
DR. SAM AMERI,
West Virginia University
DR. BOB CHASE,
Marietta College
DR. SHARI DUNN-NORMAN,
University of Missouri—Rolla
DR. THOMAS ENGLER,
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DR. IRAJ ERSHAGHI,
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DR. CRAIG VAN KIRK,
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DR. LAURENCE WEATHERLEY,
University of Kansas.

PREPARED STATEMENT OF THE UNITED STATES ADVANCED CERAMICS ASSOCIATION

Chairman Domenici, Ranking Member Reid and honorable members of the committee, on behalf of the members of the U.S. Advanced Ceramics Association (USACA), I would like to thank you for the opportunity to submit testimony on the funding for Science Research in the Department of Energy's fiscal year 2007 Congressional Budget Request. We would like to propose a comprehensive and cost-effective means of defining national needs for advanced, high temperature ceramic materials—a study during fiscal year 2007 to complete a Technology Investment Roadmap for Advanced Ceramics. This would be included under the American Competitiveness Initiative. We request $375,000 for an independent report to Congress, to be completed by February 15, 2007, that would explore and design a competitive, multi-year Federal and industry cost-shared program to research, demonstrate and develop advanced ceramics. An advisory oversight panel would be formed, and USACA would retain an independent contractor to perform the analytical work.

For over 20 years, we have been an association dedicated to pursuing the research, development and demonstration of advanced ceramic materials in many and varied aerospace, defense and energy applications. Our members have plants and facilities in over 45 Congressional Districts and 20 States.

SUMMARY

My testimony will make the following points that reflect USACA's policy priorities:

—Support for the concepts in the President's American Competitiveness Initiative;

—Added funding needed for a Technology Investment Roadmap for Advanced Ceramics.

The U.S. Advanced Ceramics Association (USACA) believes in the enduring ability of U.S. technology to create jobs and enhance our energy security. We strongly support the President's American Competitiveness Initiative announced in the State of the Union address and as part of the Department of Energy's fiscal year 2007 Budget Request to Congress. As Secretary Samuel Bodman explained, "We need to restore U.S. dominance in the physical sciences . . ." and "Materials Science" is an explicit part of this planning.

We would like to suggest some possible report language for the Energy and Water Appropriations bill that: directs the Secretary to "initiate a Technology Investment Roadmap for Advanced Ceramics, to be completed by February 15, 2007. This study shall explore and design a competitive, multiyear cost shared program with industry to research, demonstrate and develop advanced ceramic materials."

In the past three decades, breakthroughs in advanced ceramics have enabled significant new technology capabilities that are now having far-reaching impacts on the U.S. economy and defense capability. For example, ceramic catalytic converters are responsible for dramatically reducing automobile emissions. Long-life bearings are used in a wide range of high-performance energy and military applications to improve overall system performance and reduce friction, while ceramic armor plates are stopping bullets and shrapnel and saving the lives of soldiers and police. The technological breakthroughs that have made these life-changing innovations possible are the direct result of sustained RD&D investment by both industry and government.

Now, the challenges for advanced ceramics are growing, fueled by the need to create alternative energy technologies, more efficient, cleaner environmental systems, and higher performance military and aerospace systems. The Nation needs more from the industry, but there are some critical ceramic technologies that are still left in the early stages of product innovation cycles, and promising ideas sit in dark closets.

WHAT VALUE DO ADVANCED CERAMICS BRING?

Advanced ceramics are enabling materials and provide added performance and value to manufactured products. Ceramics can withstand extreme heat, high pressures and corrosive environments. They are simultaneously lightweight, strong, and durable. These attributes result in more efficient power conversion for many different methods and fuels, including hydrogen fuel cells, nuclear power, gas turbines and other engines. They also translate into tougher materials that can withstand the high temperatures of coal combustion systems, the extremes of jet engine turbines, and the force of an enemy bullet or roadside bomb.

There are several key reasons why research, development and demonstration of advanced ceramics materials are premium public investments, including:

—Advanced ceramics can increase U.S. industry competitiveness in several key global technology markets. Investments here will reverse the trend toward the movement of U.S. technology offshore to foreign enterprises.

—Investments will retain and expand U.S. jobs in new product manufacturing.

—The materials can tolerate the very high temperatures necessary for the most efficient and cleanest energy conversion technologies, whether hydrogen production from abundant domestic coal resources, or advanced nuclear reactors.

—The direct benefits will help to reduce energy consumption and carbon emissions in markets served over the next 20 years.

—Investments here would significantly reduce the normal 15–20 year product development and introduction cycle for advanced materials, speeding their use in critical energy and defense applications.

The Roadmap would have several purposes:

—examine the history and effectiveness of Federal and industry cost-shared investments already made in advanced ceramics research and development;

—highlight key factors in the success of criteria projects;

—identify the critical future applications for both civil and military needs;

—explore new types of partnership arrangements between industry and government, management alternatives and incentives for early market transition and Federal purchase;

—recommend to the Congress a multiyear, competitive, premium public investment strategy for the research, development, demonstration and deployment of advanced ceramics in critical applications.

We hope that this proposal warrants your support in the fiscal year 2007 Federal budget. We thank you for your strong interest in the advancement of technology, and its critical role in economic growth and national security.

On behalf of USACA members: Ceramic Tubular Products, LLC; Clariant Technologies; COI Ceramics, Inc.; Corning, Inc.; Deere and Co.; Extreme Composite Products, Inc.; GE Power Systems Composites, LLC; Goodrich Corporation; KiON Defense Technologies; Refractron Technologies Corporation; Saint-Gobain High-Performance Materials; Siemens Power Generation; Starfire Systems, Inc.; Surmet Corporation; Synterials, Inc.; UT-Battelle.

PREPARED STATEMENT OF THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

To the chair and members of the subcommittee, thank you for this opportunity for the American Association of Petroleum Geologists (AAPG) to provide its written perspective on the fiscal year 2007 budget for oil and natural gas research and development (R&D) programs within the subcommittee's jurisdiction.

The administration's budget submitted earlier this year contains significant reductions for the Department of Energy (DOE), Office of Fossil Energy, including the elimination of the oil and gas technology programs. AAPG requests restoration of funding for DOE Fossil Energy oil and natural gas technology programs as a matter of national policy. AAPG endorses restoration of DOE's oil and natural gas research program funding to at least 2006 levels of $64 million. AAPG also endorses full funding for the Energy Policy Act of 2005 initiative titled Ultra-Deepwater and Unconventional Natural Gas and other Petroleum Resources at $100 million. The AAPG firmly supports funding of the methane hydrates technology program (reauthorized in the Energy Policy Act of 2005) at $20 million.

AAPG, an international geoscience organization, is the world's largest professional geological society representing over 30,000 members. In the United States we have more than 20,000 members, the majority of whom are independents or consultants to the domestic petroleum industry. The purpose of AAPG is to advance the science of geology, foster scientific research, promote technology and advance the well-being of its members. Included among its members are numerous CEOs, managers, directors, independent/consulting geoscientists, educators, researchers, public servants and students. AAPG strives to increase public awareness of the crucial role that geosciences, and particularly petroleum and coal geology play in energy security and our society.

AAPG applauds the administration's efforts to enhance research in areas that diversify the options to supply energy in our economy. AAPG supports the continued efforts to develop technologies to conserve energy and technologies that will permit the economy to perform more efficiently with reduced energy input. However, as a professional organization, AAPG's 30,000 members understand that fossil fuels will continue to be a mainstay of the U.S. energy economy and the world's energy economy for decades to come. Moreover, oil and natural gas will provide many of the raw materials that allow us to function in our modern world.

The Association does not support the oversimplified projection of the state of the industry as presented by the administration's budget submission. The projection does not accurately reflect the needs of the smaller companies and individuals who have supported DOE's efforts and have benefited from the historical research conducted under DOE's programs. They are the community of independent and small producers that drill the preponderance of the domestic wells, and produce the bulk of the domestic natural gas and crude oil. They are the community who reinvest their profits in the search and development of domestic resources. They are the community whose production serves the Nation's energy needs directly. They are the community for whom the DOE programs provide technology benefits that serve the American public, the Nation and its security.

AAPG sees three vital needs that are supported by the DOE oil and natural gas R&D programs. First, the effort sustains long-term viability for recovery of the Nation's oil and natural gas endowment. Maintenance of domestic industry capability is vital to the security and well-being of the Nation. Second, publicly-funded research will promote and insure technology capabilities that continue to foster U.S. technical and economic preeminence in a rapidly changing global economy. Third and often understated is the fact that these programs contribute substantially to sustaining the institutions that educate, train and nurture a capable and efficient workforce for the Nation's energy industry.

The AAPG believe that the justification for publicly-funded research remains strong and largely independent of the price at which crude oil and natural gas commodities trade in any particular time period. The primary recipients of the technology developed with public funds are those companies/individuals who have no accessible alternative mechanism for aggregating the resources which would foster that research. They are the community of independent and small producers, who drill 90 percent of the wells, produce 85 percent of the domestic natural gas and 60 percent of the domestic crude oil in the United States. They represent a large variety of engineers, geologists, and investors that are not represented by any single society or association. AAPG, with its extensive membership represents only one portion of the diverse community of professionals and skilled technical trades involved in producing the oil and gas resources that this Nation depends on. If anything is true, research is even more important in times of high oil prices, so that users of the technology developed from the research can translate in continued domestic production.

Our Nation is the world's largest consumer and net importer of energy. According to the Energy Information Administration, during 2005, the United States consumed 20.66 million barrels of oil per day, with as much as 15.2 million barrels supplied by imports of crude and products during November 2005. Our national energy and economic security depends on a vibrant domestic oil and gas industry. While the price of crude oil is established by a global market, the costs of exploration, development, and production are influenced strongly by the application of discoveries in geosciences and new developments in technology. Thus, focused R&D can make a significant contribution to sustaining our domestic petroleum industry and to national energy security—it is important.

During the recent past, energy companies as well as most companies have worked to reduce operating costs by adopting outsourcing approaches. This has caused an unfortunate side effect of outsourcing technical preeminence in a large number of areas where the United States has been a global science and technology leader. The AAPG believes that this phenomenon is increasingly recognized as a national security issue. While Legislative and Executive Branch initiatives are responding to the broad erosion of science and technology capability, focused initiatives like the DOE oil and natural gas R&D programs that have and will continue to foster our technology preeminence, should not be overlooked or sacrificed. Such programs have been successful in the past and should be continued for the Nation's energy well-being.

Many of the more than 40 national and global geoscience-related professional organizations have reported shrinking and aging memberships over the past 2 decades. In the energy arena this is reflected in fewer and smaller, degree-granting, college and university departments and loss of technical training institutions associated with the industry. Currently, the demand for trained industry professionals and qualified trade specialists has grown in response to growing world-wide demand for oil, natural gas and coal and yet the fossil fuel industry is facing serious shortages in trained and experienced employees.

In effect, and for a number of reasons, the pipeline that has supplied this workforce is not working well. Historically, a significant portion of DOE's oil and natural gas R&D program has flowed to and through these educational and training institutions, where funds have supported faculty and attracted student researchers. No other Federal program contributes effectively to these needs. AAPG believes that funding DOE's oil and natural gas technology is absolutely vital to sustaining the supply of trained and experienced individuals in the petroleum industry workforce into this century. The lack of qualified graduates to replace our graying membership may become a national security issue within a decade if not addressed in the near term.

The Association is aware of and endorses the approach to funding research and development outlined in the Energy Policy Act of 2005. It makes very good sense to our membership. Focusing DOE emphasis on longer-term technology development and on research that the industry would not ordinarily undertake within its purview, while providing a new focus that shifts other operationally-oriented research into the arena where the private sector plays a more important role in guiding and conducting research.

AAPG supports funding for DOE R&D programs on natural gas hydrates; advanced recovery technologies; next-generation limited-footprint exploration and development technologies; fundamental studies that lead to better understanding of reservoir architecture, unconventional resources and continuous reservoirs; technology transfer to producers; and workforce training and university programs that ensure future critical national infrastructure capabilities. These programs con-

tribute to the basic understanding of the resource, and pave the way for cleaner and lower-impact extraction of the energy resources vital to National security.

Public support for technology transfer is an area that AAPG considers to be a viable use of public funds. In a number of areas like the Illinois Basin, the primary and sometimes the only source of information on new technologies is the Petroleum Technology Transfer Council. The efforts of the Council, funded under DOE's technology program and heavily fortified by academic participation, are easily accessed by smaller producers who lack the time, resources and knowledge to independently pursue technological improvements in their operations. Accelerating technology uptake is seen as a viable approach to more efficient discovery, more complete recovery, and reduction of the impact and footprint of oil and natural gas operation.

Thank you for the opportunity to present this testimony to the committee.

PREPARED STATEMENT OF THE SOCIETY OF NUCLEAR MEDICINE

The Society of Nuclear Medicine (SNM) appreciates the opportunity to submit written comments for the record regarding funding in fiscal year 2007 at the Department of Energy (DOE). SNM is an international scientific and professional organization with over 16,000 members dedicated to promoting the science, technology, and practical application of nuclear medicine.

In fiscal year 2006, the Federal Government abandoned its 50-year commitment to funding vital nuclear medicine research by eliminating funding for the Medical Applications and Measurement Science Program at DOE and making no accommodation to transition nuclear medicine programs to another Federal department. In past years, nuclear researchers have used Federal funding within DOE to make major accomplishments benefiting millions of patients with heart, cancer, and brain diseases. The loss of Federal funding for nuclear research will adversely impact future innovation in the field. For that reason, SNM advocates the immediate restoration of $37 million in funding for the Medical Applications and Measurement Science Program at the DOE. In the long term, SNM also believes that a permanent home and specific funding to support basic science research in nuclear medicine are essential; and SNM is prepared to work with the committee to identify such a home at DOE or another agency, such as the National Institutes of Health (NIH).

WHAT IS NUCLEAR MEDICINE?

Nuclear medicine is an established specialty that performs noninvasive molecular imaging procedures to diagnose and treat diseases and to determine the effectiveness of therapeutic treatments—whether surgical, chemical, or radiation. It contributes extensively to the management of patients with cancers of the brain, breast, blood, bone, bone marrow, liver, lungs, pancreas, thyroid, ovaries, and prostate, and serious disorders of the heart, brain, and kidneys, to name a few. In fact, recent advances in the diagnosis of Alzheimer's disease can be attributed to nuclear medicine imaging procedures.

Annually, more than 20 million men, women, and children need noninvasive molecular/nuclear medicine procedures. These safe, cost-effective procedures include positron emission tomography (PET) scans to diagnose and monitor treatment in cancer, cardiac stress tests to analyze heart function, bone scans for orthopedic injuries, and lung scans for blood clots. Patients undergo procedures to diagnose liver and gall bladder functional abnormalities and to diagnose and treat hyperthyroidism and thyroid cancer.

LACK OF FEDERAL FUNDING THREATENS FUTURE INNOVATIONS

The mission of the Medical Applications and Measurement Science Program at the DOE is to deliver relevant scientific knowledge that will lead to innovative diagnostic and treatment technologies for human health. The modern era of nuclear medicine is an outgrowth of the original charge of the Atomic Energy Commission (AEC) to exploit nuclear energy to promote human health. This program supports directed nuclear medicine research through radiopharmaceutical development and molecular nuclear medicine activities to study uses of radionuclides for non-invasive diagnosis and targeted, internal molecular radiotherapy.

Over the years, the DOE Medical Applications and Measurement Science Program has generated advances in the field of molecular/nuclear medicine. For example, DOE funding provided the resources necessary for molecular/nuclear medicine professionals to develop PET scanners to diagnose and monitor treatment in cancer. PET scans offer significant advantages over CT and MRI scans in diagnosing disease and are more effective in identifying whether cancer is present or not, if it has

spread, if it is responding to treatment, and if a person is cancer free after treatment. In fact, the DOE has stated that this program supports "research in universities and in the National Laboratories, occupies a critical and unique niche in the field of radiopharmaceutical research. The NIH relies on our basic research to enable them to initiate clinical trials."

The majority of the advances in molecular/nuclear medicine have been sponsored by the DOE, including:

—*Smaller, More Versatile PET Scanners*.—Brookhaven National Laboratory (BNL) has completed a prototype mobile PET scanner, which will record images in the awake animal. The mobile PET will be able to acquire positron-generated images in the absence of anesthesia-induced coma and correct for motion of the animal. The long-term goal is to develop PET instrumentation able to diagnose neuro-psychiatric disorders in children.

—*Highest Resolution PET Scanner Developed*.—Scientists at the Lawrence Berkeley National Laboratory (LBNL) have developed the world's most sensitive PET scanner. The instrument is 10 times more sensitive than a conventional PET scanner and became operational in 2005.

—*Imaging Gene Expression in Cancer Cells*.—Images of tumors in whole animals that detect the expression of three cancer genes were accomplished for the first time by investigators at Thomas Jefferson University and the University of Massachusetts Medical Center. This advanced imaging technology will lead to the detection of cancer in humans using cancer cell genetic profiling.

—*Modeling Radiation Damage to the Lung*.—Treatment of thyroid disease and lymphomas using radioisotopes can cause disabling lung disease. Investigators at Johns Hopkins University have developed a Monte Carlo model that can be used to determine the probability of lung toxicity and be incorporated into a therapeutic regimen. This model will optimize the dose of radioactivity delivered to cancer cells and avoid untoward effects on the lung.

—*New Radiopharmaceuticals With Important Clinical Applications*.—The DOE radiopharmaceutical science program has developed a number of innovative radiotracers at the University of California at Irvine for the early diagnosis of neuro-psychiatric illnesses, including Alzheimer's disease, schizophrenia, depression, and anxiety disorders.

—*Rapid Preparation of Radiopharmaceuticals for Clinical Use*.—The DOE-sponsored program at the University of Tennessee has developed a new method for preparing radiopharmaceuticals by placing a boron-based salt at the position that will be occupied by the radiohalogen. The method has been used to prepare a variety of cancer-imaging agents.

With restored DOE funding, essential molecular/nuclear medicine research will continue at universities, research institutions, national laboratories, and small businesses. Moreover, research with radiochemistry, genomic sciences, and structural biology will be able to usher in a new era of mapping the human brain and using specific radiotracers and instruments, to more precisely diagnose neuro-psychiatric illnesses and cancer.

The future of life-saving therapies and cutting-edge research in molecular/nuclear medicine and imaging depends on funding for the DOE Medical Applications and Measurement Science Program. Therefore, SNM recommends that funding for the DOE Medical Applications and Measurement Science Program be restored to the fiscal year 2005 funding level of $37 million.

In addition, to gain the full benefits of nuclear medicine, it is important to ensure that nuclear medicine researchers have a steady supply of radionuclides. One way to accomplish this goal would be to create a National Radionuclide Enhancement Production program at the DOE that would meet the Nation's medical and homeland security needs.

CONCLUSION

By restoring funding to the Medical Applications and Measurement Science Program at the DOE or by making an appropriate provision for nuclear research funding within another Federal department, policy makers will keep our Nation at the forefront of nuclear medicine research and innovation. We thank you for the opportunity to present our views on funding for these initiatives at the DOE and would be pleased to answer any questions you may have.

PREPARED STATEMENT OF THE AMERICAN PUBLIC POWER ASSOCIATION

The American Public Power Association (APPA) is the national service organization representing the interests of over 2,000 municipal and other State and locally

owned utilities throughout the United States (all but Hawaii). Collectively, public power utilities deliver electricity to one of every seven electric consumers (approximately 43 million people). We appreciate the opportunity to submit this statement outlining our fiscal year 2007 funding priorities within the Energy and Water, and Related Agencies Subcommittee's jurisdiction.

FEDERAL POWER MARKETING ADMINISTRATIONS (PMAS)

Power Marketing Administration Interest Rate Proposal.—The administration's fiscal year 2007 budget includes a recommendation that would raise electricity rates by changing the interest rate charged by the Southeastern Power Administration (SEPA), the Southwestern Power Administration (SWPA), and the Western Area Power Administration (WAPA) on all new investments in projects whose interest rates are not set by law. Specifically, the Department of Energy's (DOE) budget calls for the these three Power Marketing Administrations (PMAs) to set their interest rates at the level that government corporations pay to borrow funds from the Federal Government. To implement this proposal, DOE will amend the regulation that governs how the PMAs establish their rates and will do so administratively, without any consultation with or action from Congress.

The administration's budget proposes to increase the interest rate charged on all new investments in these hydroelectric facilities to a level that is charged government corporations—the rate that reflects the interest cost for the Federal Government to provide loans to government corporations. SEPA, SWPA and WAPA are neither government corporations nor do they borrow funds from the U.S. Treasury. All rates are set to recover the dollars appropriated by Congress for the investment in the hydroelectric facilities and to cover the cost to operate these projects. If implemented, this proposal could increase rates considerably for customers served by most of the Power Marketing Administrations.

This proposal creates a serious precedent and should be rejected, because: (1) the process for implementing the proposal can be done without congressional involvement or approval; (2) the proposal would arbitrarily raise revenue from electric customers for deficit reduction; and (3) the proposal reverses decades of rate making precedent and accepted cost recovery practices by administrative fiat. We urge the subcommittee to block the implementation of this proposal.

Bonneville Power Administration Rate Proposal.—Also included in DOE's fiscal year 2007 budget is a proposed administrative action that would direct the Bonneville Power Administration (BPA) to use any net "secondary market revenues" in excess of $500 million per year towards accelerated Federal debt repayment. Because the change would be made through the rulemaking process, congressional approval is not needed for the policy to go into effect. The Office of Management and Budget (OMB) calculates that this plan would provide a total of $924 million from fiscal year 2007–2016 from these "higher-than-historical net secondary revenues." OMB believes that this measure is needed to free up BPA borrowing authority. However, experts in the Northwest have calculated that the proposal would result in a 10 percent wholesale rate increase that BPA would be forced to pass on to ratepayers. The Congressional Budget Office has calculated that the effect of the administration's proposal on the U.S. Treasury would be $300 million over 10 years beginning in 2008, which means it will have no impact on the 2007 fiscal year budget. We urge the subcommittee to block the implementation of this proposal.

Purchase Power and Wheeling.—We urge the subcommittee to authorize appropriate levels for use of receipts so that the Western Area Power Administration (WAPA), the Southeastern Power Administration (SEPA) and the Southwestern Power Administration (SWPA) can continue to purchase and wheel electric power to their municipal and rural electric cooperative customers. Although appropriations are no longer needed to initiate the purchase power and wheeling (PP&W) process, the subcommittee continues to establish ceilings on the use of receipts for this important function. The PP&W arrangement is effective, has no impact on the Federal budget, and is supported by the PMA customers who pay the costs. We agree with the administration's budget requests for PP&W for fiscal year 2007, which are as follows: $274.9 million for Western Area Power Administration (WAPA); $34.4 million for Southeastern Power Administration (SEPA); and $3 million for Southwestern Power Administration (SWPA).

Costs of Increased Security at Federal Multi-Purpose Projects.—Following the attacks of September 11, 2001, the Bureau of Reclamation (Bureau) embarked upon an aggressive program to enhance the security of Federal dams to protect the facilities against terrorist attacks. Based on historical precedent, the Bureau initially determined that the costs of increased security measures should remain a non-reimbursable obligation of the Federal Government. In fiscal year 2005, however, the

Bureau reversed its position and asked for some of these costs to be reimbursed from power customers. That year, Congress disagreed with the Bureau's request that these expenses be reimbursable, but in the Energy and Water Development Appropriations Act of 2006 (HR 2419, November 7, 2005), Congress directed that $10 million of the estimated $18 million for guards and patrols be provided by reimbursable funding. The bill also directed the Bureau to provide a report to Congress within 60 days that would delineate the planned reimbursable security costs by project. The report (issued in March 2006) is similar to the previous (May 2005) report, except that it also includes "facility fortification upgrades" as a reimbursable cost. Previously, the Bureau had assured its stakeholders that only the costs of guards and patrols would be reimbursable. This additional obligation in essence makes everything reimbursable at some point. Regardless of the details of the Bureau's report, APPA continues to believe in the validity of the historic rationale established in the 1942 and 1943 Interior Department Appropriation Acts for treating costs of increased security at multi-purpose Federal projects as non-reimbursable obligations of the Federal Government. We therefore urge Congress to add language to the Energy and Water Development Appropriations Act of 2007 to clarify that all costs of increased security at dams owned and operated by the Bureau be non-reimbursable.

Renewable Energy Production Incentive (REPI) and Renewable Energy Programs.—The Department of Energy's REPI program was created in 1992's Energy Policy Act (EPAct) as a counterpart to the renewable energy production tax credits made available to for-profit utilities, and was recently reauthorized through 2016 in the Energy Policy Act of 2005 (EPAct05). EPAct05 authorizes DOE to make direct payments to not-for-profit public power systems and rural electric cooperatives at the rate of 1.5 cents per kWh (1.9 cents when adjusted for inflation) from electricity generated from a variety of renewable projects. According to DOE sources, in order to fully fund all past and current REPI applicants, over $80 million would be needed for fiscal year 2007. Despite the demonstrated need, however, DOE has asked for only $4.96 million for fiscal year 2007, citing budgetary constraints. We greatly appreciate the subcommittee's interest in this small but important program as evidenced by its support of funding for the program either at or above the administration's budget requests in the last few years despite the tight budgetary environment. We urge the subcommittee to continue its support with an even greater increase.

Energy Information Administration.—In order to fulfill the Energy Information Administration's (EIA) data collection responsibility in regard to the electric power industry, it has had to revise and expand its data collection to include new participants. EIA now collects information from all sectors of the power industry: investor-owned utilities, rural electric cooperatives, public power systems and Federal utilities, as well as power marketers and non-utility generators. Most EIA data forms are filled out by all industry sectors. However, the Federal Energy Regulatory Commission (FERC) collects data from its jurisdictional utilities (investor-owned utilities) and the Department of Agriculture's Rural Utilities Service (RUS) collects information from its utility borrowers (rural electric cooperatives). EIA does not duplicate electricity data collected by these Federal agencies. Thus EIA uses a small number of forms to collect comparable information from electric industry sectors not subject to the FERC or RUS reporting requirements. EIA–412 is one of these forms. Funding for the distribution, collection and analysis of EIA–412 was eliminated by EIA in fiscal year 2005, but could be reinstated if EIA chose to allocate a portion of its budget to the collection of the EIA–412 data. We urge the subcommittee to encourage the EIA to provide funding for this form in fiscal year 2007 within the context of its overall appropriation. The indefinite elimination of form EIA–412 will leave a gap in the electricity industry's data coverage.

Storage for High-level Nuclear Waste.—We support the administration's efforts to finalize the location of a permanent storage site at Yucca Mountain, Nevada. The President requested $544.5 million for fiscal year 2007 for the nuclear waste repository at Yucca Mountain is a step in the right direction and we encourage the subcommittee to provide funding for the project at or above the administration's request.

Advanced Hydropower Turbine Program.—APPA is disappointed with the administration's decision to phase out this important program to develop a hydroelectric turbine that will protect fish and other aquatic habitats while continuing to allow for the production of emissions-free hydroelectric power. We urge the subcommittee to consider providing funding for this important initiative.

Energy Conservation.—APPA appreciates the subcommittee's interest in energy conservation and efficiency programs at DOE and we hope that the subcommittee will once again allocate a funding level over and above the administration's request for fiscal year 2007.

Weatherization and Intergovernmental Activities.—APPA supports the administration's request of $225 million for fiscal year 2007 for helping to increase the efficiency of commercial and residential buildings, including weatherization assistance, the State and community energy conservation programs.

Clean Coal Power Initiative and FutureGen.—APPA is disappointed with the administration's request of only $5 million for fiscal year 2007 for the Clean Coal Power Initiative. We urge the subcommittee to substantially increase the funding for this program to be consistent with the President's commitment to fund this program at $2 billion over 10 years. We also urge the subcommittee to provide $54 million in new funding for fiscal year 2007 for the FutureGen program, as opposed to drawing from deferred funds from fiscal year 2006 as the administration proposes.

Distributed Generation Fuel Cells.—APPA is disappointed with the administration's request of $63.35 million for fiscal year 2007 for distributed generation fuel cell research and development, and urges the subcommittee to allocate additional funding for this program.

Hydrogen Fuel Initiative and Vehicle Technologies.—APPA supports the administration's efforts to improve the feasibility of making available low-cost hydrogen fuel cells, and support its request of $289.5 million for hydrogen research and development in fiscal year 2007. APPA also supports the administration's request for $166 million for vehicle technologies that would apply hydrogen fuel cell technology to vehicles as well as provide for research for hybrid and electric vehicle technologies to facilitate widespread deployment of these technologies.

Navajo Electrification Demonstration Program.—APPA supports full funding for the Navajo Electrification Demonstration Program at its $15 million authorized funding level for fiscal year 2007. The purpose of the program is to provide electric power to the estimated 18,000 occupied structures in the Navajo Nation that lack electric power.

National Climate Change Technology Initiative.—APPA supports the administration's efforts to promote greenhouse gas reductions through voluntary programs and investments in new technologies. We are therefore disappointed that the administration has only requested $1 million for fiscal year 2007 for the policy office of the National Climate Change Technology Initiative. We encourage the subcommittee to consider allocating additional funds for this program.

Federal Energy Regulatory Commission (FERC).—DOE has requested $230.8 million for the overall operations of the Federal Energy Regulatory Commission (FERC) for fiscal year 2007. APPA supports this request, which is an appropriate increase over fiscal year 2006 given FERC's additional responsibilities under EPAct05.

PREPARED STATEMENT OF THE ALLIANCE TO SAVE ENERGY

The Alliance to Save Energy (the Alliance) is a bipartisan, nonprofit coalition of business, government, environmental, and consumer leaders committed to promoting energy efficiency worldwide to achieve a healthier economy, a cleaner environment, and greater energy security. The Alliance, founded in 1977 by Senators Charles Percy and Hubert Humphrey, currently enjoys the leadership of Senator Mark Pryor as Chairman; Washington Gas Chairman and CEO James DeGraffenreidt, Jr. as Co-Chairman; and Representatives Ralph Hall, Zach Wamp and Ed Markey and Senators Jeff Bingaman, Susan Collins and Jim Jeffords as its Vice-Chairs. More than 100 companies and organizations currently support the Alliance as Associates. The Alliance recommends increases of $17.9 million in several existing energy-efficiency deployment programs, $15 million for newly authorized programs, and increased funding for building energy-efficiency research in fiscal year 2007, compared to last year's appropriated levels.

BACKGROUND

Rationale for Federal Energy-Efficiency Programs.—We understand that budgets are tight, but we have seen that the costs of not addressing energy waste are just too high. Gasoline and natural gas prices have doubled in the last few years, and electricity prices also reached all-time highs. All told, recent energy price increases cost American families and businesses over $300 billion last year. These high prices have caused plant closings and loss of manufacturing jobs, and have made many low-income homeowners unable to pay their heating bills. President Bush recognized that our long-term energy security and environmental issues due to our wasteful use of fossil fuels are equally serious when he called for ending our "addiction" to oil. The Energy Information Administration projects that without further action our fossil fuel use will rise by a third by 2030, and our imports will rise by a half.

Improved energy efficiency is the best near-term strategy to begin balancing demand and supply and bring energy prices down, and is a key component of a long-term energy strategy. Energy efficiency is the Nation's greatest energy resource—we now save more energy each year from energy efficiency than we get from any single energy source, including oil, natural gas, coal, or nuclear power. The Alliance to Save Energy estimates that if we tried to run today's economy without the energy-efficiency improvements that have taken place since 1973, we would need 43 percent more energy supplies than we use now.

A Record of Success.—DOE programs play a key role in these savings through the research and development (R&D) of new energy-efficiency technologies, and by helping these technologies achieve widespread use. These programs reduce energy consumption, dependence on foreign oil, and energy costs. They also help create jobs in the United States and decrease harmful pollution. A 2001 National Research Council report found that every $1 invested in 17 DOE energy-efficiency R&D programs returned nearly $20 to the U.S. economy in the form of new products, new jobs, and energy cost savings to American homes and businesses. Environmental benefits were estimated to be of a similar magnitude.

Budget Authorizations and Studies.—A series of reports and bills have supported a major increase in funding for DOE energy-efficiency programs. The Energy Policy Act of 2005 (EPAct 2005) authorized $783 million for energy-efficiency R&D in fiscal year 2007, an additional $240 million for distributed energy and other electric R&D, and $820 million for various deployment programs. This follows calls for expanding energy-efficiency research by the National Commission on Energy Policy, the President's Committee of Advisors on Science and Technology, the Energy Futures Coalition, and the President's National Energy Policy.

Summary of the President's Request.—The President's overall fiscal year 2007 budget request for energy-efficiency programs at DOE's Office of Energy Efficiency and Renewable Energy is $517 million, down $111 million (18 percent) from the fiscal year 2006 appropriation, and $78 million below the administration's fiscal year 2006 request. This large cut follows a gradual slide from $694 million appropriated for these energy-efficiency programs in fiscal year 2002. Funding for these programs is down one-third (34 percent) since 2002 after inflation. In addition, the request for electricity R&D programs, many of which focus on efficiency, is $96 million, down $41 million (30 percent) from the fiscal year 2006 appropriation. After accounting for some program transfers, funding for buildings, industry, and vehicles R&D also is reduced. But some of the biggest cuts are to deployment programs, including weatherization of low-income homes, support for State building codes, industrial energy audits, and Federal energy management.

ALLIANCE RECOMMENDATIONS

In order to address the critical energy problems facing our Nation, the Alliance recommends funding for DOE energy-efficiency programs in line with the authorized levels. However, given fiscal realities, we have included much smaller specific funding requests below.

The impact of DOE energy-efficiency programs has been multiplied by the combination of research to develop new technologies, voluntary deployment and market transformation programs to move them into the marketplace, and standards and codes to set a minimum threshold for using cost-effective technologies. All three legs are vital. However, the Alliance believes that programs that focus on near-term energy-efficiency deployment are especially critical right now to meeting our Nation's natural gas and electricity needs. The administration's proposed elimination of the Gateway Deployment function and cuts to other key deployment programs are not consistent with achieving our national energy policy goals of reducing high energy costs and reducing our reliance on imported oil.

It is important that the program increases in the administration's budget and proposed below not be paid for through cuts to other highly-effective efficiency programs, which also address critical national energy needs. While we support the fuel cell and biofuels programs, they do not take the place of core programs that can have broader, more certain, and more near-term energy savings impacts. In particular, the Alliance opposes repeated cuts that now threaten the viability of Industrial Technologies research programs and the dramatic proposed cuts to the distributed energy R&D program and the Weatherization Assistance Program.

Existing Deployment Programs (Office of Energy Efficiency and Renewable Energy)

Building Codes Training and Assistance (formerly Weatherization and Intergovernmental Programs).—While residential and commercial building codes are implemented at the State level, the States rely on DOE for technical specifications, training, and implementation assistance. We estimate that building energy codes could

save 7.2 quads of energy by 2025. The new 2006 IECC model residential code includes measures to simplify the code and ease implementation, and thus presents exciting opportunities to increase code adoption and compliance. EPAct 2005 authorized $25 million a year for building codes, including a new program to improve compliance. Yet the administration has proposed eliminating funding for Building Codes Training and Assistance. The Alliance recommends a $4.5 million increase above the fiscal year 2006 appropriations level, for total funding of $9.0 million.

Industrial Assessment Centers and Best Practices (Industrial Technologies—Crosscutting).—One of the most effective DOE industrial programs conducts plant-wide energy assessments, develops diagnostic software, conducts training, develops technical references, and demonstrates success stories. Oak Ridge National Laboratory reports that DOE-ITP's Best Practices outreach saved 82 trillion Btu in 2002, worth $492 million. University-based Industrial Assessment Centers (IAC) have an immediate impact on the competitive performance of hundreds of smaller U.S. factories. The same efforts train industry's next generation of innovators. Yet the administration has proposed to cut IAC by 30 percent. The Alliance recommends the following increases above the fiscal year 2006 appropriations levels:

—a $2 million increase for Industrial Assessment Centers, for total funding of $8.4 million,

—a $3 million increase for Best Practices, for total funding of $10.9 million.

Federal Energy Management Program.—This program has helped cut Federal building energy waste by 24 percent from 1985–2001—a reduction that now saves Federal taxpayers roughly $1 billion each year in reduced energy costs. But funding has steadily decreased for this program, even though large savings remain untapped. EPAct 2005, in addition to setting aggressive new energy saving targets, requires DOE to implement rules, guidelines, and reports on the targets, Federal building standards, Federal procurement, and metering. A needed funding increase for this program will actually save taxpayer money in lower Federal energy bills. The Alliance recommends a $3 million increase above the fiscal year 2006 level, for total funding of $20.0 million.

Equipment Standards and Analysis (Building Technologies).—Appliance standards have already reduced U.S. electricity use by an estimated 2.5 percent (88 billion kWh/year) and reduced peak power demand by approximately 21,000 MW, at a minimal Federal cost and with major energy bill savings to consumers. But the program is already years behind on about 20 standards. EPAct 2005 adds rulemakings on three new products, and requires DOE to issue updates on several new legislated standards. DOE has issued an ambitious plan to catch up, and requested a $1.7 million increase. But more is needed to implement the plan. The Alliance recommends a $2.5 million increase over the fiscal year 2006 appropriations level for total funding of $12.7 million.

Energy Star (formerly Weatherization and Intergovernmental Programs).—Energy Star is a successful voluntary deployment program at EPA and DOE that has made it easy for consumers to find and buy many energy-efficient products. In 2004 alone, Energy Star helped Americans save enough energy to power 25 million homes and avoid greenhouse gas emissions equivalent to those from 20 million cars—all while saving $10 billion on their utility bills. Every Federal dollar spent on the Energy Star program results in an average savings of more than $75 in consumer energy bills and the reduction of about 3.7 tons of carbon dioxide emissions. With additional funding, the Energy Star program can update its criteria, label additional products, and provide Americans with more information on how to save energy. The Alliance recommends a $1 million increase over the fiscal year 2006 appropriations level for total funding of $6.9 million.

New Deployment Programs Authorized in EPAct 2005

Energy Efficiency Public Information Initiative (Program Support).—The quickest way to reduce energy demand and bring high energy prices down is through consumer education. EPAct 2005 (Sec. 134) authorizes $90 million per year for a public education program to provide consumers the information and encouragement necessary to reduce energy use. Such programs have a proven track record of success, as in the 2001 "Flex Your Power" campaign in California, which significantly reduced consumer electricity demand and assisted in avoiding further black-outs. DOE has contributed a little to effective education campaigns, but much more funding is needed. The Alliance recommends at least $10 million for this new program.

Energy Efficiency Pilot Program (Office of Electricity Delivery and Energy Reliability).—State and utility energy-efficiency programs have been remarkably successful at reducing electricity demand, strain on the grid, and the need for costly new power plants. However, they have been starved for funds due to electric restructuring. A few States are experimenting with innovative performance-based

policies to use the efficiency resource. EPAct 2005 (Sec. 140) authorizes $5 million per year for a new program to provide funding to several States to assist in the design and implementation of energy-efficiency resource programs that will lower electricity and natural gas use by at least 0.75 percent a year. The Alliance recommends $5 million for this new program.

Other Key Programs

Building Technologies R&D.—Energy use by residential and commercial buildings accounts for over one-third of the Nation's total energy consumption. Of all the DOE energy-efficiency programs, Building Technologies continues to yield perhaps the greatest energy savings. The 2001 National Research Council study found that just three small buildings R&D programs—in electronic ballasts for fluorescent lamps, refrigerator compressors, and low-e glass for windows—have already achieved cost savings totaling $30 billion, at a total Federal cost of about $12 million. Current buildings research programs, such as advanced windows and solid state (LED) lighting, are equally promising. Yet the administration's proposed budget would reduce overall Building Technologies funding by 7 percent. Buildings R&D should be a priority for funding increases, especially for Windows and Insulation and Materials R&D.

Energy Information Administration (EIA) Energy Consumption Surveys.—EIA's Energy Consumption Surveys provide unique and invaluable data to policy makers, congressional staff, researchers, and industry. The administration's budget request includes $3.65 million, just enough to continue the Residential, Manufacturing, and Commercial Buildings Energy Consumption Surveys (RECS, MECS, and CBECS) every 4 years. The Alliance recommends an increase of $1.9 million, for total funding of $5.5 million, in order to reinstate the residential transportation survey, last conducted in 1994, and to conduct the surveys every 3 years as required by the Energy Policy Act of 1992, instead of the current 4-year schedule.

ALLIANCE TO SAVE ENERGY ENERGY AND WATER APPROPRIATIONS FISCAL YEAR 2007 PRIORITIES

	Fiscal Year 2006 Approp	Fiscal Year 2007 Request	Alliance Rec.	Increase Over 2006
Key existing deployment programs (in order of priority):				
Building Codes Training and Assistance	4.5	.....	9.0	+4.5
Industrial Assessment Centers and Best Practices (Industrial—Crosscutting):				
Industrial Assessment Centers	6.4	4.0	8.4	+2.0
Best Practices	7.9	8.8	10.9	+3.0
Federal Energy Management Program	17.0	14.9	20.0	+3.0
Equipment Standards and Analysis (Buildings)	10.2	11.9	12.7	+2.5
Energy Star	5.9	5.8	6.9	+1.0
New deployment programs authorized in EPAct 2005 (in order of priority):				
Public Information Initiative (Program Support)	.....	.....	10.0	+10.0
Energy Efficiency Pilot Program (Electricity)	.....	.....	5.0	+5.0
Additional priorities:				
Building Technologies R&D (Buildings)	83.4	77.3	([1])	.....
EIA Energy Consumption Surveys	3.6	3.6	5.5	+1.9

From testimony of Kateri Callahan, President, Alliance to Save Energy. All figures in millions of dollars. Also oppose cuts to Industrial Technologies R&D, Distributed Energy R&D, and Weatherization Assistance Program.

[1] Increase.

PREPARED STATEMENT OF THE NATIONAL ASSOCIATION OF STATE ENERGY OFFICIALS

Mr. Chairman and members of the subcommittee, I am Peter Smith of New York and Chair of the National Association of State Energy Officials (NASEO). NASEO is submitting this testimony in support of funding for a variety of U.S. Department of Energy programs. We are in the midst of an energy emergency and the programs described below help the American people respond. Specifically, we are testifying in support of no less than $74 million for the State Energy Program (SEP). Forty members of the Senate have written to this subcommittee supporting $74 million in SEP funding for fiscal year 2007. The 20 percent cut in SEP in the fiscal year 2006 bill is devastating. SEP is the most successful program operated by DOE in this area. The administration's proposed increase to $50 million is an important first step. SEP is focused on direct energy project development, where most of the resources are expended. We also support $275 million for the Weatherization Assistance Pro-

gram (WAP). In addition, dramatic successes have been achieved through the State Energy Programs Special Projects (SEP Special Projects), which should receive at least funding of $15.1 million, equal to the fiscal year 2006 level. The administration has proposed no funds for this program in fiscal year 2007. SEP Special Projects has set a standard for State-Federal cooperation and matching funds to achieve critical Federal and State energy goals. These programs are successful and have a strong record of delivering savings to low-income Americans, homeowners, businesses, and industry. We also support increases of $1.6 million above the President's budget request for the Energy Information Administration (EIA) of $89.8 million for EIA's State Heating Oil and Propane Program, and to preserve EIA Forms 182, 856 and 767. EIA funding is a critical piece of energy emergency preparedness and response. NASEO continues to support funding for a variety of critical deployment programs, including Building Codes Training and Assistance ($5.6 million), Rebuild America ($3.8 million), Energy Star ($5.9 million) and Clean Cities ($7.9 million). NASEO supports funding for the Office of Electricity Delivery and Energy Reliability at least at the fiscal year 2006 request of $161.9 million, with specific funding for the Division of Infrastructure Security and Energy Restoration of $18 million, which funds critical energy assurance activities. We strongly support the R&D function, Operations and Analysis and Distributed Energy activities within this office. The industries program should be funded at a $74.8 million level, equal to the fiscal year 2005 levels, to promote efficiency efforts and to maintain U.S. manufacturing jobs, especially in light of the loss of millions of these jobs in recent years. Proposed cuts in these programs are counter-productive and are detrimental to a balanced national energy policy.

Over the past 4 years, both oil and natural gas prices have been rising in response to international events, increased international and domestic use and the result of last year's hurricanes, etc. The $3.00/gallon gasoline prices will be with us for some time. We also expect $70 oil to continue for an extended period of time, with an expanded crisis situation as summer approaches. The State energy offices are in the forefront of energy emergency response, and this will be a challenge a year after 20 percent cut in SEP funding. In addition, we now have quantifiable evidence of the success of the SEP program which demonstrates the unparalleled savings and return on investment to the Federal taxpayer of SEP. Every State gets an SEP grant and all States and territories support the program.CO_2

In January 2003, Oak Ridge National Laboratory (ORNL) completed a study and concluded, "The impressive savings and emissions reductions numbers, ratios of savings to funding, and payback periods . . . indicate that the State Energy Program is operating effectively and is having a substantial positive impact on the Nation's energy situation." ORNL has now updated that study and found that $1 in SEP funding yields: (1) $7.22 in annual energy cost savings; (2) $10.71 in leveraged funding from the States and private sector in 18 types of project areas; (3) annual energy savings of 47,593,409 million source BTUs; and (4) annual cost savings of $333,623,619. The annual cost-effective emissions reductions associated with the energy savings are equally significant: (1) Carbon—826,049 metric tons; (2) VOCs—135.8 metric tons; (3) NOx—6,211 metric tons; (4) fine particulate matter (PM_{10})—160 metric tons; (5) SO_2—8,491 metric tons; and (6) CO—1,000 metric tons.

State Energy Program Special Projects and Other Deployment Programs.—SEP Special Projects provided matching grants to States to conduct innovative project development. It has been operated for the past 10 years and has produced enormous results in every State in the United States. We support funding of at least the fiscal year 2005 funding level of $15.1 million. The administration has proposed no direct funding in fiscal year 2007 for SEP Special Projects. SEP Special Projects grants are awarded competitively and thus complement the SEP formula grant, with almost all the States submitting winning proposals in 2005. These projects have provided successes in virtually every congressional district. The other deployment programs, including Rebuild America, Building Codes Training and Assistance (which the administration proposed to zero out), Clean Cities and Energy Star should receive funding of $23.2 million. The administration proposed eliminating the Gateway Deployment Program by name, and shifted resources to other activities.

Industrial Energy Program.—A funding increase to a level of $74.8 million for the Industrial Technologies Program (ITP) is warranted. This is a public-private partnership in which industry and the States work with the Department of Energy to jointly fund cutting edge research in the energy area. The results have been reduced energy consumption, reduced environmental impacts and increased competitive advantage of manufacturers (which is more than one-third of U.S. energy use). The States play a major role working with industry and DOE in the program to ensure economic development in our States and to try to ensure that domestic jobs are preserved.

EIA.—Additional funding is required to preserve EIA Forms 182, 856 and 767. The funding is only $1 million per year. The Domestic Crude Oil Report (182) and Foreign Crude Oil Report (856) are not reliably available elsewhere, and tracks our importation and distribution of oil. As we are facing increased international tensions, there could never be a worse time to eliminate these forms. The 767 form tracks central station generation emissions, critical to State regulatory programs. The State Heating Oil, Natural Gas and Propane Program requires $600,000 for adequate sampling.

Examples of Successful State Energy Program Activities.—The States have implemented thousands of projects. Here are a few representative examples.

California.—The California Energy Commission has operated energy programs in virtually every sector of the economy. The State has upgraded residential and nonresidential building codes, developed a school energy efficiency financing program, industrial partnerships in the food and waste industry, instituted a new replacement program for school buses utilizing the newest natural gas, advanced diesel and hybrid technologies. The buildings program has reduced consumption by enormous amounts over the past few years, through alternative financing programs and outreach.

Hawaii.—The State is considering comprehensive energy legislation at the present time. A comprehensive program of energy efficiency for commercial and residential buildings has saved $9.3 million annually. The State recently moved forward with energy code revisions projected to save tens of millions of dollars. The Hawaii "Green Business Program" saves $175 in water, energy and waste minimization for every $1 in SEP funds invested.

Idaho.—In Idaho the State has rated homes utilizing the Energy Star tools and signed-up 77 new builders to participate in the program. An aggressive energy efficiency financing program has produced 2,428 loans, totaling $15.8 million for significant energy savings. The agricultural energy program has focused on reducing irrigation costs and usage to improve agricultural productivity and costs.

Kentucky.—The programs supported by SEP have assisted in construction of high energy performance K–12 schools, developed $45 million in energy savings performance contracts, and funded energy efficiency and renewable energy projects at universities and local governments.

Missouri.—The energy office in Missouri has been operating a low-interest energy efficiency loan program for school districts, colleges, universities and local governments. Thus far, public entities have saved more than $72 million each year, with more than 400 projects. The State energy office has also worked with the Public Utility Commission and the utilities within the State to get $20 million invested in residential and commercial energy efficiency programs. A new revolving loan for biodiesel has also been initiated.

Mississippi.—The State operates an energy investment loan program targeted to schools, hospitals and manufacturers. Mississippi has been very active in the Energy Star program and has been attempting to conduct post-Katrina reconstruction in an energy efficient manner.

Montana.—The State has issued over $7.5 million in bonds to fund 60 energy efficiency projects in State buildings. The savings pay for themselves very quickly. The State has also upgraded building energy codes and instituted 44 projects impacting over 2 million square feet of building space, with non-Federal leverage of $11.5 million.

Nevada.—The State has focused on energy code training and technical assistance to ensure that new housing construction is conducted in an energy efficient manner, as well as a large expansion in renewable energy programs.

New Mexico.—With new State legislation, the State energy office is supporting and expanding renewable energy usage, tax incentives for hybrid vehicles, school energy efficiency programs, technical assistance to the wind industry and expansion of geothermal resources. The State has arranged approximately 40 energy performance contracts with annual energy savings in the millions. There has also been an expansion in the use of ethanol and biofuels.

North Dakota.—The State energy office is supporting programs for ethanol and biodiesel promotion. The State has also funded energy efficiency programs for local builders, schools and for lower income households.

Texas.—The Texas Energy Office's Loan Star program has long produced great success by reducing building energy consumption and taxpayers' energy costs through efficient operation of public buildings. This saved taxpayers more than $172 million through energy efficiency projects. Over the next 20 years, Texas estimates that the program will save taxpayers $500 million. In another example, the State promoted the use of "sleep" software for computers, which is now used on 105,000 school computers, saving 33 million kWh and reducing energy costs by $2 million

annually. The State has initiated the Texas Emissions Reduction Plan/Texas Energy Partnership in 41 urban counties to reduce emissions through cost-effective energy efficiency projects.

Utah.—SEP funds have been utilized to support solar and wind programs, as well as implementation of a stronger energy building code. The State has also supported local government energy efficiency.

Washington.—The State energy agency works with the Northwest Energy Efficiency Alliance to target $20 million in funding for energy efficiency and renewable energy projects. The State is also closely involved in energy emergency preparedness and response. The Resource Efficiency Managers Program, supported by SEP, conducts on-site training for energy savings. For example, working with Ft. Lewis and Puget Sound naval facilities, the program has saved over $2.5 million.

West Virginia.—The energy office has focused on industrial energy savings, including identified savings of $2.4 million in 2005 alone. Energy projects in the industrial sector have totaled $29 million during the past 9 years. The State has also supported dramatic expansion of renewable energy programs and is projecting $3 million in school energy cost savings each year through energy efficiency programs.

PREPARED STATEMENT OF THE MID-WEST ELECTRIC CONSUMERS ASSOCIATION, INC.

The Mid-West Electric Consumers Association ("Mid-West") represents hundreds of rural electric cooperatives, public power districts and municipally-owned utilities in the nine States of the Missouri River Basin, including: Colorado, Iowa, Kansas, Minnesota, Montana, Nebraska, North Dakota, South Dakota and Wyoming. This testimony supports fiscal year 2007 funding for the Western Area Power Administration ("WAPA"): (1) $275 million for purchase power and wheeling; and (2) a total of $193,482 million for operations, maintenance ($45,734 million) and program direction ($147,748 million), utilizing the "net-zero" approach. Mid-West opposes: (1) the administration's proposal to increase electric rates of the Power Marketing Administrations ("PMAs") by changing the interest rate on new Federal power investments; and (2) reallocating certain irrigation costs in the Pick-Sloan Missouri Basin Program.

PURCHASE POWER AND WHEELING

Mid-West supports the proposed budget for purchase power and wheeling. WAPA and other PMAs are responsible for marketing and delivering hydropower generated at Federal dams to eligible consumer-owned utilities. In light of soaring energy costs and record low reservoir levels, funding is required for purchase power and wheeling. The administration's budget request of $275 million for purchase power and wheeling is minimally adequate. These costs are paid for by Federal power customers. The persistent drought in the Missouri River Basin means that the 2006 generation estimated by the Corps of Engineers will be 61 percent of normal. Present projections could be further reduced if the navigation season is shortened.

The language in the fiscal year 2002–2006 appropriations bills should be retained so that the PMAs could continue to utilize customer-generated receipts to help fund their purchase power and wheeling costs. Otherwise, small utilities, such as rural electric cooperatives, municipally-owned utilities, Native American tribes, irrigation and public power districts, would have to develop their own transmission and power firming agreements which would increase costs. The language regarding purchase power and wheeling included in the fiscal year 2007 budget request should be inserted in the fiscal year 2007 Energy and Water Appropriations bill. Mid-West supports this language.

"NET ZERO" APPROPRIATIONS FOR FEDERAL PMAS

The administration's fiscal year 2006 budget proposed a "net-zero" funding approach for the annual cost of the PMAs' operations, maintenance and program direction. Unfortunately, this provision was not included in the fiscal year 2007 budget request. The "net-zero" proposal recognizes that certain Federal outlays for a given fiscal year will be returned to the Treasury in that same fiscal year. Mid-West supports this proposal, which is already used to fund other Federal energy agencies. The PMAs' budgets cover all the costs of their operations. A budget scoring adjustment is required to make this "net-zero" approach truly effective. Receipts collected by WAPA to repay program direction and operation and maintenance expenditures should be reclassified from "mandatory" to "discretionary."

INTEREST RATE CHANGE

Historically, the interest charged on Federal power investment has been the U.S. Treasury's long term yield rate. Each year, the Treasury provides to the PMAs the interest rate to be charged for investments made in that year. Those investment costs plus interest are repaid to the Treasury through power rates charged to Federal power customers.

Now, the administration has stated that it intends to change that practice and charge the "agency rate," which is the rate charged to governmental corporations. The difference between this rate and Treasury's long term yield rate is described as "small," averaging about 0.4 percent, which would garner about $2–$3 million per year from Federal projects where the interest rate is not set by law.

The PMAs—WAPA, Southeastern, and Southwestern are not government corporations. They do not have borrowing authority or other authorities available to government corporations. The PMAs are Federal agencies within the Department of Energy and are funded annually by congressional appropriations.

The current practice of using Treasury's long-term yield rate has worked well for decades. It is wrong to assign an interest rate formula for a government corporation to Federal agencies that are not government corporations.

REALLOCATION OF IRRIGATION COSTS

The proposed reallocation and acceleration of Pick-Sloan Missouri Basin investment is apparently a rehash of a similar proposal in last year's budget request. It is hard to tell exactly what is proposed since there is no legislative language or even a detailed explanation of the proposal.

The short "explanations" that have been offered are inconsistent. One section of the budget calls for repayment of vaguely defined construction costs—"Power customers will be responsible for repayment of all construction from which they benefit." (p. 188 Department of Interior: Mandatory Proposal Recover Pick-Sloan Project Costs). However, Bureau of Reclamation Highlights (BH–36) calls for "repayment of construction and operations costs . . . ".

The budget request erroneously states that Pick-Sloan power customers have not heretofore been responsible for repaying these costs. Pick-Sloan power customers are responsible for repaying all the costs of the power investment, joint costs allocated to the power function, and a huge portion of investment related to irrigation. These repayment obligations have been organized under the "ultimate development" concept.

Most simply put, the administration's budget request would destroy the ultimate development concept that allocates costs among the various project purposes and determines repayment practices.

CORPS OF ENGINEERS "CONSTRUCTION GENERAL" ACCOUNT

As part of its Operations and Maintenance budget, the Corps of Engineers is requesting $85 million for recovery of the pallid sturgeon on the Missouri River. In fiscal year 2006 the Corps is spending roughly $54 million from its Construction General account. Mid-West sees no reason to change the budget classification of these dollars in fiscal year 2007. Monies related to pallid sturgeon recovery should be transferred to the Corps Construction General account, where they more properly belong, and where they have been accounted for in past years.

CONCLUSION

Thank you for the opportunity to provide written testimony to the subcommittee on these important issues. We stand ready to respond to any questions.

PREPARED STATEMENT OF THE HOSPITAL FOR SPECIAL SURGERY

Mr. Chairman, and members of the subcommittee, thank you for the opportunity to submit testimony to the hearing record regarding Hospital for Special Surgery (HSS) in New York, New York. Since its founding over 140 years ago, HSS has been the hospital of choice for countless individuals of all ages—from infants to older adults—suffering from musculoskeletal conditions. Today, HSS is considered the premier specialty hospital for orthopedics and rheumatology in the United States and abroad.

As you know, funds to support the establishment of the National Center for Musculoskeletal Research at Hospital for Special Surgery were included in Energy and Water Appropriations in fiscal year 2001 and fiscal year 2005. First, I would like

to take this opportunity to thank the subcommittee for its support and to report on the excellent progress that has been made in achieving this goal.

With a combination of institutional, private, and government support, HSS has transformed its research enterprise over the past 6 years, from the physical plant to the depth and focus of its scientific expertise. HSS has conducted the largest recruitment drive in its history. Expanded, state-of-the-art laboratories have increased the quality and quantity of investigations. Today, 70 percent of HSS' basic research activity is federally funded, meeting national benchmarks. Our critical mass of expertise is composed of 34 bench scientists and 129 full-time laboratory fellows, technicians, and support. Of course, the most important measure of success is HSS's capacity to improve quality of life through treatments derived from a greater understanding of disease. This has been fortified by the scientific talent and new resources made possible by the Hospital's generous supporters. Today, the National Center for Musculoskeletal Research at HSS is an internationally recognized leader whose pioneering scientists are making significant contributions to understanding diseases like arthritis, osteoporosis, and lupus, and advancing progress toward the development of better treatments and cures.

The Hospital's groundbreaking basic, translational, and clinical research efforts are unique in that they are informed by its very sizeable patient base, which is the largest of any musculoskeletal hospital in the world. HSS's surgical techniques, rehabilitation practices, orthopedic imaging, anesthesiology and pain management, and non-surgical interventions are the "best practices" in the field. To continue to advance the state-of-the-art, while meeting the needs of increasing numbers of patients, HSS is now working to create an entirely new platform of patient care for the 21st century. The centerpiece of this initiative is the expansion and modernization of its clinical facilities to provide the highest level of care to the increasing number of patients seeking the expertise of the Hospital's extraordinary medical staff. HSS has requested a fiscal year 2007 appropriation of $4 million to advance this important project.

The Hospital last expanded in 1996 when facilities meant for polio patients and lengthy hospitalizations were redesigned and modernized. In the succeeding years, pioneering advances in musculoskeletal medicine have taken place, many of them using biosynthetic materials, molecular diagnostics, innovative surgical tools and techniques, and computer guidance and modeling. Since 1996, HSS has added 65 medical staff and numerous specialized centers dedicated to research and clinical care in orthopedics, rheumatology, complementary medicine, sports medicine, non-surgical interventions, imaging, and pain prevention.

New medical staff have the opportunity to learn from surgeons and physicians who have practiced at HSS for decades, embracing a great breadth and depth of experience, historical knowledge of the field, and insight into patients' needs, expectations, and potential for recovery. Building on experience, we have increased our efficiencies and ability to help increasing numbers of patients from all over the world. For example, the average length of stay for joint replacement has been reduced from 6 days (1996) to less than 4.5 days. For patients who qualify for minimally invasive surgery, many can leave the hospital within 2–3 days. In the future, we feel certain some joint replacement surgery will be carried out on an ambulatory basis.

The major demographic and sociological trends observed worldwide are fueling a demand for care at HSS that is unprecedented. There has been an extraordinary increase in the over-60 population and their need for musculoskeletal medicine; and there is a more active, younger population desiring to remain mobile and play sports as they grow older. From 1996 to 2005, Special Surgery's annual surgical volume rose from 10,700 to 17,500 and its annual outpatient visits rose from 147,000 to 230,000, a total increase of approximately 60 percent. Special Surgery is also a magnet referral center for complex surgeries, with growing numbers of patients requiring extensive, high-level care.

Meeting demand is only part of the equation. Bringing improved treatments and interventions to patients is of utmost importance. HSS continues to be a leader in advancing clinical treatments that enable patients to recuperate more quickly and regain mobility. HSS-led innovations on the horizon include:

—Minimally invasive knee, hip, and shoulder implants for younger patients. "Baby boomers" are our fastest growing patient segment.

—Spinal disc replacement surgery for degenerative disc disease, and spinal stabilization without fusion.

—Effective treatments for early arthritic patients when there is a "window of opportunity" to slow and perhaps halt the progression of disease.

—Biosynthetic materials that mimic everyday movements to repair sports injuries to ligaments, tendons, meniscus, and cartilage.

—Biological solutions with minimal side effects to treat and prevent the progress of a wide range of inflammatory conditions.
—New diagnostics to predict the efficacy of medical treatments.
—Advanced imaging techniques that can diagnose disease at the pre-clinical stage, enabling earlier and more effective treatment.
—New medications to intervene before nerve injury and remold pain pathways, minimizing post-operative pain.
—Computer-assisted surgical procedures.

An expanded clinical facility will enable the countless patients who seek our help to have the benefit of these medical innovations.

Our new clinical facilities and extraordinary volume of patients will also provide an unparalleled opportunity to create a robust clinical research program. The potential for new knowledge in joint replacement is significant, since HSS performs the greatest number of hip and knee replacements in the world, more than 4,000 annually. The clinical research program will be built on a strong basic research foundation, which was strengthened over the past several years with the vital support of the Energy and Water Subcommittee.

In our "new hospital" every patient would have an opportunity to partner with us as a research patient in the effort to gain a deeper understanding of bone and joint disease to perfect treatment for future generations. With advanced technology, patients will help create their own research records, containing uniform, prospective data on the nuances of their treatment and progress. Each specialty service will have its own clinical research coordinator, and patients will have "real time" access to information about clinical trials. Clinical research analysis, coupled with our knowledge of disease at the basic science level—particularly arthritis and inflammatory disease—will provide a powerful resource for advancing musculoskeletal health and restoring patients' mobility. We are currently recruiting new leadership for this program and developing the required infrastructure to successfully launch this initiative in our expanded facilities.

The Hospital's new facilities will be completed by 2009 and encompass 201,000 square feet of new construction and 75,000 square feet of renovated existing space. On-site patient services will be significantly expanded and redesigned for greater efficiency and comfort. Highlights include a modernized, expanded ambulatory surgery center; enhanced rehabilitation facilities; new imaging, pain management, and minor procedures facilities; and an enhanced sports medicine rehabilitation center. In addition, the Hospital is refurbishing the lobby of the Main Building to better serve patients and their families. HSS took a unique approach to the design of this project, forming a collaborative team of physicians, nurses, architects, and planners to develop an optimum healing environment that flows efficiently for both patients and medical staff.

Mr. Chairman, the objectives of Hospital for Special Surgery's Clinical Facilities Expansion and Modernization Project are consistent with those historically funded by the Department of Energy in the Energy & Water Appropriations Bill. We hope that the subcommittee will provide $4 million in fiscal year 2007 toward this capital expansion, which will benefit countless patients as they grow older and seek help for a range of musculoskeletal conditions. The chances are, no matter where patients live, they will be helped by a medical advance pioneered at HSS or by an HSS-trained physician. To keep this promise alive, we must be able to expand clinically and lead the way, as we have done since opening our doors as America's oldest existing orthopedic hospital.

PREPARED STATEMENT OF THE GE ENERGY ADVANCED TECHNOLOGY OPERATION

The following testimony is submitted on behalf of GE Energy (GE) for the consideration of the committee during its deliberations regarding the fiscal year 2007 budget requests for the Department of Energy (DOE). GE urges the committee to provide funding to initiate the Western IGCC Demonstration Program, as authorized in the Energy Policy Act of 2005. Additional resources also are needed for the Advanced Turbines program, DOE's major research effort focusing on gas turbines for electricity production which also addresses key needs for hydrogen turbines. GE further recommends $10 million in additional funding for the SECA program to support further advances in fuel cell technologies for power production. Investments in these and the other important programs discussed below will help to meet the challenges of assuring a diverse portfolio of domestic power generation resources for the future.

Western IGCC Demonstration Program.—As the committee is aware, there has been a substantial resurgence in interest in coal-fired electricity generation. Integrated gasification combined cycle (IGCC) is a leading technology for the next generation of coal plants. IGCC reduces emissions of sulfur dioxide by 75 percent, nitrogen oxides by 33 percent, and particulate matter by approximately 50 percent compared to a state-of-the-art pulverized coal plant. IGCC also is more cost effective at removing mercury and carbon dioxide. Development of several large-scale commercial IGCC plants is underway. These "first-of" plants are a critical step towards reaching IGCC's entitlement in performance and cost.

If the full national environmental and energy benefits of IGCC are to be achieved, the ability of IGCC technology to efficiently use low rank coals, such as those from the Powder River Basin that are increasing in importance as a low cost, domestic fuel source, must be addressed. Engineering design for the first-of-a-kind plant capable of commercial operation on low rank coals is a key requirement. Unlike natural gas plants, the first-of-a-kind advanced coal plant for low rank coal will require significant preliminary engineering and technology integration. Section 413 of the Energy Policy Act of 2005 authorized the Western Integrated Coal Gasification Demonstration Program. This cost-shared program would provide the framework for the Federal Government and industry to work together to expand the envelope of efficient, low emissions IGCC technology to economically use these coals. This important initiative is deserving of the committee's consideration.

IGCC.—GE recommends that the budget for DOE's Advanced IGCC program be increased by $12 million in fiscal year 2007 to be used to offset the first-of-a-kind project engineering development costs that are required to deliver commercial IGCC plants capable of utilizing low rank coals. This would relieve launch customers and early adopters of being differentially burdened with advancing this technology, and will ultimately lead to benefits throughout the industry as this up-front development engineering is captured to provide designs for like-plants.

Clean Coal Power Initiative.—The budget request includes only minimal funding for the Clean Coal Power Initiative (CCPI) in fiscal year 2007, which will presumably delay future solicitations for the program. While GE understands the administration's desire to increase the effectiveness of the program, the need for a commercial demonstration program for advanced coal power technologies is undiminished. Federal investment in clean coal technology has produced a profound improvement in coal-based generation technology. The pre-commercial demonstrations of IGCC technology at TECO Polk and Wabash through the predecessor Clean Coal Technology Program proved the economic viability of IGCC and served as a catalyst for the industry to develop IGCC into commercial power generation offerings.

While the development of several large-scale commercial IGCC plants is underway, preliminary development at the pilot stage already is ongoing for the next generation of IGCC technology. GE sees a continuing need for the CCPI to serve as the vehicle for the scale-up, plant integration, and initial deployment of advanced IGCC technologies. The CCPI also would serve as means to support the deployment at commercially-relevant scale of technologies that the FutureGen initiative is likely to develop. Any failure to continue funding for the CCPI program at prior year levels should not be seen as a weakening of the commitment to this program.

Turbines.—GE recommends that funding be increased by $22 million to a total of $35 million for the Advanced Turbines program, within the Fossil Energy/Coal/Fuels and Power Systems budget line. This program represents the Department's primary research effort focusing on gas turbines for coal-based electricity production, such as FutureGen, and is designed to enable the low-cost implementation of major policy initiatives in the areas of climate change, reduced powerplant emissions and future generation technologies. Continued turbine research and development is needed to address DOE's efficiency and emissions goals for power generation from coal, the Nation's most abundant domestic energy resource.

Gas turbine R&D is focused on advanced combustion and high temperature turbine technology for syngas/hydrogen fuels that will result from IGCC and FutureGen type power plants. The program addresses those gas turbine elements where the technology required for the use of syngas/hydrogen fuels differs from the requirements for natural gas fueled gas turbines. Work in this area is proceeding under DOE-awarded cost-share contracts resulting from a March 2005 solicitation entitled "Enabling Technologies for High-Hydrogen Fuels." Unless the fiscal year 2007 budget for the Advanced Turbines program is increased, funding will be inadequate for this promising work, and the progress and benefits of this research will be delayed accordingly.

GE has experience with gas turbines operating on fuel blends containing hydrogen, and has performed laboratory demonstration tests on high hydrogen content fuel. This experience highlighted the need for development of advanced combustion technology in order to drive down NO_X emissions and enable advanced hydrogen generation processes. In addition, current strategies for effective integration of all major subsystems need to be reviewed and redefined for use with hydrogen fuel.

Continued funding of DOE's program is essential for FutureGen to meet its goal of substantial improvement in the cost of carbon capture. FutureGen is intended to serve as a demonstration for the technical feasibility of achieving nearly carbon-free power with IGCC. FutureGen is being structured to serve as a test bed for advanced technology that is needed to reduce the performance penalty and improve the economics of carbon capture. If it is to meet its goals, the FutureGen program will need to draw on advancements resulting from the hydrogen turbine program.

GE recommends the committee's attention to the testimony submitted by the Gas Turbine Association relative to the allocation of additional funding above the budget submission within the Advanced Turbines program budget. In particular, GE encourages the committee to assure adequate funding for the University Turbine Systems Research Program.

Solid-Oxide Fuel Cell (SOFC) Development, Solid State Energy Conversion Alliance (SECA) Program

SOFC utilize an electrochemical process to cleanly convert a range of fuels into electricity. A SOFC/gas turbine hybrid system utilizes the fuel cell as the primary power generation source. The residual fuel and energy from the fuel cell is combusted in a gas turbine to create additional power. By combining these two technologies, SOFC/gas turbine hybrid systems have the potential to revolutionize fossil-based power generation with new standards for efficiency and reduced emissions.

DOE's SECA program supports the development of high temperature SOFC fuel cell technology for stationary power generation. This technology offers the potential for a step change improvement in efficiency and reduction in emissions for power generation from coal. Successful development of large scale (e.g., 500 MW) SOFC-turbine hybrid based power plants would provide highly efficient, cost-effective, near-zero atmospheric emissions in coal-based central power generation applications capable of reaching the DOE target for efficiencies up to 60 percent. The systems also would be compatible with carbon-free concepts as planned for FutureGen.

GE successfully completed SECA Phase I SOFC system testing in 2005. This success contributed to the DOE SECA program's achievement of its key 2005 milestones, which is an important indicator that the program is making good technical progress. Key technology challenges remain and are being addressed as the DOE program proceeds. Continued joint DOE-industry investment in SOFC-hybrid technology will position U.S. industry as leaders in the rapidly growing worldwide "ultra-clean" energy market, in which other governments, including the Japanese and European governments, are investing heavily.

An increase of $10 million above the administration's budget request, for total funding of $73 million, is needed in fiscal year 2007 to fully fund the SECA program. GE recommends that DOE be given the flexibility to apply funding as best needed to meet DOE's and the program's goals.

RENEWABLE ENERGY PROGRAMS

Wind Energy.—Sustainable generation of clean energy from wind is imperative to realizing the objectives of the President's Advanced Energy Initiative, as well as the goals of the Energy Policy Act of 2005. The milestones established by the Department of Energy to reach 100 GW of wind energy capacity by 2020 demand a coordinated effort to develop favorable long term policy, energy infrastructure, and product technology advancement to continue to drive the cost of electricity down for both on-shore and off-shore applications. Reaching the DOE goals would result in 10 percent of U.S. power generation being produced from renewable wind power. The emissions reduction benefit would be the equivalent of removing 20 million automobiles from the highways.

DOE's internal Wind R&D programs and cost-share programs with industry are instrumental in accelerating technology advancement and cost of electricity reduction. Unfortunately, constraints on fiscal year 2006 funding caused DOE to slow some programs and cancel others. In support of the DOE goals, for fiscal year 2007 these programs need to be accelerated, and stopped programs restarted. Consistent with the recommendations of the American Wind Energy Association, GE recommends that DOE's fiscal year 2007 Wind program funding be increased by $30 million to a total of $74 million.

OFFICE OF ELECTRICITY DELIVERY AND ENERGY RELIABILITY

Microgrids.—GE Global Research is collaborating with the Office of Electricity Delivery and Energy Reliability (OE) in a $4 million program initiated in 2005 to design and demonstrate an Advanced Energy Management System for Microgrids. The DOE's vision of the future electric power infrastructure, GRID 2030, identifies microgrids as one of three major technical cornerstones for a more reliable and congestion-free energy delivery system, and describes distributed intelligence and clean power as key technologies needing development. GE supports an additional $10 million in funding to support the realization of the GRID 2030 vision by bringing microgrid technologies to market and also to better leverage into this effort the integration of the Department's Distributed Energy Program into the OE organization.

Cross Cutting Technologies—Ceramic Matrix Composites.—Work on ceramic matrix composites (CMC) has been an important research component of the budget for Distributed Energy Programs. As DOE's budget request acknowledges, advanced materials research, such as research on composites, is designed to enhance the efficiency and environmental performance of gas turbines. CMCs offer greater than 300 to 500° F capability when compared to metallic materials currently used in gas turbine products. A 50° F improvement in materials capability is normally considered one generation of materials development. The increased temperature capability of CMCs provides potential benefits in power output, efficiency, emissions, and part life, depending on the component and how it is utilized in power generation equipment. Other potential energy-related opportunities for CMCs include aircraft engines for commercial and military applications and aerospace applications.

CMCs are a high-risk, high-payoff technology with great promise for energy savings. GE Energy is committed to cost-sharing with DOE in a multi-year effort to further the development of this critical technology. Funding of $2 million is necessary for fiscal year 2007 for CMC crosscutting technology material development, through the Distributed Energy Technology Research program.

PREPARED STATEMENT OF THE ELECTRIC DRIVE TRANSPORTATION ASSOCIATION

Last year when Congress was assembling the DOE budget, the cost of a barrel of oil was just surpassing $50; today the price hovers above $70 and the administration and Congress have declared greater oil independence a priority. The committee has the opportunity, in the fiscal year 2007 budget, to make substantial inroads in addressing oil dependence through aggressive support for electric drive technology programs at the Department of Energy.

The Electric Drive Transportation Association (EDTA) is a multi-industry trade association whose mission is promotion of electric drive technology in all its applications. Our members include a diverse representation of vehicle and equipment manufacturers, energy providers, component suppliers and end users who recognize the potential for reduces petroleum consumption and decreased emissions of greenhouse gases and pollutants that electric drive offers. A list of our membership is provided with this statement.

Multiple technologies, including hybrids, battery electric and fuel cells, as well as diverse fueling options, will be necessary to meet the transportation needs of the Nation efficiently. Advances in these technologies are supported in a number of existing programs in the DOE Office of Energy Efficiency and Renewable Energy (EERE), including the Hydrogen and Fuel Cells Technologies Programs and the Vehicle Technologies Programs. Important new programs, authorized in the Energy Policy Act of 2005 (EPAct 05), will enable even greater progress in reducing the transportation sector's reliance on petroleum.

Unfortunately, the administration's request does not fully invest in the programs that will move the Nation toward its petroleum goals. Specifically, the administration's fiscal year 2007 request for FreedomCAR and Vehicle Technologies is $166 million—a more than 8 percent decrease from the fiscal year 2006 appropriation and flat funded with the fiscal year 2006 request.

Regarding the Fuel Cell and Hydrogen Technology Programs, the administration request ignores the thoroughly vetted directives of EPAct 2005. The $195 million requested for the Hydrogen Technology Program is a welcome increase over the current appropriation but does not address the funding and programmatic direction of EPAct 2005. We are concerned that failure to adequately fund the program may undermine the ability to meet program 2015 and 2020 milestones and postpone achievement of commercial options for petroleum free transportation.

The request also omits funding for EPAct 2005 Loan Guarantees for Innovative Technologies, which will expand the domestic infrastructure for efficient technologies while minimizing the government's financial exposure. We urge the com-

mittee to provide adequate resources to ensure that this program can get underway as expeditiously as possible.

We support the administration's request for $14 million for research and development of plug-in hybrid technologies. It is an investment that will assist in proving out this new electric drive option. It will also provide support for battery and other technology advances that will advance all electric drive options: hybrid, battery electric and fuel cells.

EDTA also encourages appropriate funding for the fleet-based programs that support technology developments. In particular, the EPAct 2005 includes an important modification to the EPAct 92 fleet requirements, directing the creation of an alternative compliance waiver option for State and alternative energy provider fleets that will permit the use of hybrid and other technologies to comply with fleet fuel reduction requirements.

Although the request includes $11 million for Technology Introduction subprogram, which is charged with implementing this option, none are specifically directed to implementation of the waiver option. With multiple, higher profile program responsibilities, we are concerned that insufficient resources will be allocated to waiver implementation.

Another important fleet-oriented petroleum reduction program, Clean Cities works with voluntary coalitions to build clean and efficient local fleets, including schools, airports, and municipal bus fleets. The request for this program would cut already limited funding by a third, to $4.4 million.

As the compounding consequences of oil dependence are being made acutely clear, we urge the committee to take full advantage of the solutions that are possible through the EERE vehicle programs. We respectfully request that you fund these programs at the levels commensurate with their benefits to the Nation: increased U.S. security, a cleaner environment and a stronger economy.

Thank you for your consideration.

EDTA Members: A123 Systems; Advanced Transportation Technology (ATTI); Air Products & Chemicals; American Honda Motor Company; American Public Power (APPA); Austin Energy; Azure Dynamics Corporation; Ballard Power Systems; CEREVEH; Chamber of the Americas; CITELEC; City of New York; Curtis Instruments; DaimlerChrysler Corporation; Edison Electric Institute; eGO Vehicles; Electric Power Research Institute (EPRI); Electricite de France; Electrovaya; Energy Conversion Devices, Inc./Ovonic; Enova Systems; Fallbrook Technologies; General Motors Corporation; Georgetown University; Global Electric MotorsCars (GEM); Greater Oslo Public Transport; Hyundai-Kia America Tech Center; Independent Energy Efficiency (IEEP); Long Island Power Authority; Massachusetts Division of Energy Resources; Maxwell Technologies; Methanex, Inc.; Michelin North America; Mid-Del Lewis Eubanks (AVTS); National Alternative Fuels Training Consortium (NAFTC); National Golf Car Manufacturers Association; New York Power Authority; New York State Energy-NYSERDA; Nissan North America; Northeast Sustainable Energy Association; Opal-RT; Pacific Gas & Electric (PG&E); Raser Technologies; Sacramento Municipal Utility District (SMUD); Saft America, Inc.; San Diego State University; Southern California Edison; TM4, Inc.; Tokyo Electric Power Company (TEPCO); Toyota; Tri-Met; University of California, Davis/ITS; UQM Technologies, Inc.; U.S. Department of Energy; Volkswagen; Voltage Vehicles/ZAP.

PREPARED STATEMENT OF THE AMERICAN SOCIETY OF PLANT BIOLOGISTS

The American Society of Plant Biologists (ASPB) appreciates this opportunity to submit testimony on the fiscal year 2007 budget request for the Department of Energy Office of Science. We urge the committee to approve the President's proposal in the American Competitiveness Initiative, Advanced Energy Initiative and fiscal year 2007 budget request for an increase of 14 percent to $4.1 billion for the DOE Office of Science. Included with the President's budget request is $255 million for the Chemical Sciences, Geosciences and Energy Biosciences Division. A total of $35.8 million within the division is requested by the President for the Energy Biosciences program. We urge you to support the President's request for Basic Energy Sciences, the Chemical Sciences, Geosciences and Energy Bioscience Division and the Energy Biosciences program within the division.

Basic energy research on plants and microbes supported by the Energy Biosciences program contributes to advances in renewable resources for fuel and other fossil resource substitutes, clean-up and restoration of contaminated environmental sites, and in discovering new knowledge leading to home-grown products and chemicals now derived from petroleum.

The Energy Biosciences program supports leading research on plants and microbes conducted primarily by university-based scientists throughout the country. Grants are awarded through a competitive process utilizing rigorous peer-review standards.

Energy Biosciences grantees include scientists who have received recognition from a number of distinguished science institutions and organizations, including national and international science societies, the National Academy of Sciences, and a Nobel Prize selection committee. Basic research on plants and microbes contributes to advances that help address the Nation's future demands for domestically-produced energy sources, such as energy crops.

We fully support the President in his State of the Union Address in which he called for the Nation to conduct energy research for bio-fuels to help break the Nation's addiction to foreign oil. The President explained in the State of the Union Address and in subsequent talks in Tennessee, Minnesota and Colorado soon after, that research on plant cellulose to produce ethanol, on switch grass, wood chips and other sources of bio-energy could help transition a significant portion of the Nation's transportation sector away from imported gasoline to domestically produced bio-fuels.

Research the committee supported within the Energy Biosciences program led to the landmark discovery of how to break down plant cellulose into ethanol. We applaud the committee for its support of basic research on plants and microbes within the Energy Biosciences program and within the Office of Biological and Environmental Research to help make possible the President's achievable proposal to make domestically produced bio-fuels directly cost competitive with gasoline.

As ASPB President, Michael Thomashow, University Distinguished Professor at Michigan State University, a member of the National Academy of Sciences, noted, with the development of "genomic sciences" and sophisticated new instrumentation, we can now probe the life of plants at levels that just a few years ago seemed, at best, to be wishful thinking. Indeed, given the distance that we have come since the plant sciences entered the modern "molecular genetic era," ushered in with the advent of plant transformation systems during the 1980's, the goal of understanding plant processes at a "systems" level would not appear to be just a trendy pipedream, but a real, attainable goal within the not-too-distant future, Thomashow noted.

How will we use these powerful new approaches and the insights that we gain about basic plant biology? The answer is that they will be used in many ways and have many applications ranging from the nutritional enhancement of food products to the production of bio-fuels and feedstocks for the chemical and pharmaceutical industries. One area that is particularly exciting is the development of renewable energy sources.

We are all well aware of the geopolitical challenges that are posed by our current dependence on non-renewable sources of energy. In addition, we are well aware of the negative impacts that using many of these energy sources can have on the environment, such as emissions of greenhouse gasses attendant with the use of petroleum-based transportation fuels. It would be wonderful if we could replace petroleum-based transportation fuels with more environmentally friendly "bio-fuels" produced from renewable "energy crops." For some within the oil and related industries, the doubt arises whether this is even within the realm of possibility. Could the United States, for instance, grow and harvest enough "biomass" on an annual basis to produce enough ethanol and bio-diesel to significantly decrease our dependence on petroleum-based transportation fuels without jeopardizing the production of food to feed the Nation and to meet export demands?

This general issue was addressed in a joint study by the U.S. Department of Energy and U.S. Department of Agriculture released in April 2005. The results were published in a report entitled "Biomass as Feedstock for a Bioenergy and Bioproducts Industry: The Technical Feasibility of a Billion-Ton Annual Supply" (http://www.eere.energy.gov/biomass/pdfs/final_billionton_vision_report2.pdf). In particular, the study committee asked whether the land resources of the United States would be capable of producing a sustainable supply of biomass sufficient to displace 30 percent or more of our current petroleum consumption, a goal that would require the production of approximately 1 billion dry tons of biomass feedstock per year. In short, the study committee concluded that the answer to this question is "yes"; that annually, U.S. forest and agricultural lands have the potential to produce, respectively, over 360 and 990 million dry tons of biomass feedstock. Reaching these levels of biomass production, however, will require a number of developments including changes in production practices and significant increases in crop yields. For example, crop land would likely be managed with no-till methods and a 50 percent increase in the yields of corn, wheat and other small grain crops would be required.

Using biomass feedstocks to provide significant levels of renewable energy is an exciting, inspiring vision for the future of America and the greater world community. The goal set by John F. Kennedy of putting a human being on the moon by the end of the 1960's served as a unifying theme that helped nucleate efforts that led to spectacular advances in science and technology and, equally importantly, helped attract young people to these areas of study. Setting national and international goals for producing renewable, environmentally friendly energy sources also has the potential to stimulate important advances in science and technology and to attract young people to these areas of study. In regard specifically to plant scientists, such goals also provide a framework for integrating much of plant biology research. Understanding plant growth and development at a systems level feeds into increasing biomass, as does understanding basic mechanisms of abiotic and biotic stress tolerance. Understanding how cell walls are synthesized and their composition determined is not only fundamental to our knowledge of basic plant biology, but also is a central issue in biomass production and conversion. The same can be said of understanding how plants synthesize and regulate the production of lipids and oils as well as many other plant constituents and processes.

Plant scientists have a fundamental role to play in developing clean, renewable energy sources thanks in large part to the history of strong support for the Energy Biosciences program of this committee.

The rigorous standards consistently followed by the Energy Biosciences program in reviewing grant proposals and making awards have contributed to the outstanding success of the program. For example, research sponsored by the Biosciences program led to new findings on the capture of energy from photosynthesis. This research led to the presentation to Biosciences-program-grantee Dr. Paul Boyer of the shared award of the 1997 Nobel Prize in Chemistry (biochemistry). Photosynthesis is an essential energy conversion process upon which all life on earth depends. Photosynthesis in plants is nature's way of utilizing sunlight to produce chemical energy and to bring carbon dioxide into biological organisms. Increased knowledge in this area could lead to a better understanding of how to manage carbon dioxide in the atmosphere. Further research in this area could also contribute to development of alternative energy sources.

Plants are a major source of renewable and alternative fuels in the United States. Greater knowledge of the basic biology of plants will lead to further economies in domestic production of renewable fuels.

ASPB is a non-profit society of nearly 6,000 scientists based primarily at universities. ASPB publishes the two most-frequently cited plant science journals in the world, Plant Physiology and The Plant Cell. We deeply appreciate the continued strong support of the committee for innovative research on plants and microbes sponsored by the Office of Science, Office of Basic Energy Sciences through its Energy Biosciences program and Office of Biological and Environmental Research. Please let us know if we could provide any additional information.

Disclosure Statement on Federal Grant Support.—The American Society of Plant Biologists (ASPB) received Federal grants from USDA–CSREES in the amount of $7,000 in each of fiscal years 2005 and 2006 to help coordinate the USDA–CSREES Plant and Pest Biology Stakeholders' Workshop and print the subsequent workshop report. Many associations representing growers of commodity crops; science societies representing the research community; and officials administering Federal research programs participated.

PREPARED STATEMENT OF THE AMERICAN GEOLOGICAL INSTITUTE

Thank you for this opportunity to provide the American Geological Institute's perspective on fiscal year 2007 appropriations for geoscience programs within the subcommittee's jurisdiction. The President's budget requests significant cuts in the Department of Energy (DOE) research programs related to energy resources. In particular, the President's request would eliminate the Office of Fossil Energy's oil and natural gas technology research programs and the Office of Energy Efficiency and Renewable Energy's geothermal technology research program. Given the interest of the administration and Congress to reduce the Nation's foreign oil dependence and reduce gasoline prices, it seems like an inopportune time to eliminate programs that could help with these objectives. We hope that Congress will restore funding for these programs. AGI applauds the requested 14 percent increase for the largest supporter of physical science research in the United States, DOE's Office of Science, and encourages the subcommittee's full support for this increase. We also support the President's Advanced Energy Initiative which includes increased funding for clean energy research. The request focuses spending on solar, biomass/biofuels, hy-

drogen fuel, FutureGen and nuclear power, however, other clean energy alternatives, such as geothermal, could be included in appropriations while remaining consistent with national needs and objectives.

AGI is a nonprofit federation of 44 geoscientific and professional associations that represent more than 100,000 geologists, geophysicists, and other earth scientists. The institute serves as a voice for shared interests in our profession, plays a major role in strengthening geoscience education, and strives to increase public awareness of the vital role that the geosciences play in society's use of resources and interaction with the environment.

DOE FOSSIL ENERGY RESEARCH AND DEVELOPMENT

AGI urges you to take a critical look at the Department of Energy's Fossil Energy Research and Development (R&D), Natural Gas Technology R&D and Oil Technology R&D accounts as you prepare to craft the fiscal year 2007 Energy and Water and Related Agencies Appropriations bill. Over the past 5 years, members of Congress have strongly emphasized the need for a responsible, comprehensive energy policy for the country. The growing global competition for fossil fuels has led to a repeated and concerted request by Congress to ensure the Nation's energy independence. The President's proposal that these programs be eliminated is short-sighted and will not allow us to achieve energy independence.

The research dollars spent by these programs go largely to universities, State geological surveys and research consortia to address critical issues like enhanced recovery from known fields and unconventional sources that are the future of our natural gas supply. This money does not go into corporate coffers, but it helps American businesses remain competitive by giving them a technological edge over foreign companies. All major advances in oil and gas production can be tied to research and technology. AGI strongly encourages the conferees to restore these funds and bring these programs back to at least fiscal year 2003 levels.

Today's domestic industry has independent producers at its core. With fewer and fewer major producing companies and their concentration on adding more expensive reserves from outside of the contiguous United States, it is the smaller independent producers developing new technologies concentrated on our domestic resources. However, without Federal contributions to basic research that drives innovation, small producers cannot develop new technologies as fast, or as well, as they do today. The program has produced many key successes among the typical short-term (1 to 5 years) projects usually chosen by the DOE. And even failed projects have proven beneficial, because they've often resulted in redirection of effort toward more practical exploration and production (E&P) solutions. Ideally, DOE and private sector participants share the program's R&D funding on a 50/50 basis, with the government contributing actual dollars and the company contributing dollars or "in kind" products and services. To justify the use of public funds, new technology developed from such projects is made available to the industry.

In 2003, at the request of the Interior Appropriations Subcommittee, the National Academies released a report entitled Energy Research at DOE: "Was It Worth It? Energy Efficiency and Fossil Energy Research 1978 to 2000". This report found that Fossil Energy R&D was beneficial because the industry snapped up the new technologies created by the R&D program, developed other technologies that were waiting for market forces to bring about conditions favorable to commercializing them and otherwise made new discoveries. In real dollars from 1986–2000 the government invested $4.5 billion into Fossil Energy R&D. During that time, realized economic benefits totaled $7.4 billion. This program is not only paying for itself, it has brought in $2.9 billion in revenue. Why not continue to fund oil and gas R&D so we can attain the energy independence we need for stable and continued economic growth?

The Federal investment in energy R&D is particularly important when it comes to longer-range research with diversified benefits. In today's competitive markets, the private sector focuses dwindling research dollars on shorter-term results in highly applied areas such as technical services. In this context, DOE's support of fossil energy research, where the focus is truly on research, is very significant in magnitude and impact compared to that done in the private sector, where the focus is mainly on development. Without more emphasis on research, we risk losing our technological edge in this global and increasingly more expensive commodity.

As we pursue the goal of reducing America's dependence on unstable and expensive foreign sources of oil, we must continue to increase recovery efficiency in the development of existing domestic oilfields, conserving the remaining in-place resources. Since the 1980's, 80 percent of new oil reserves in this country have come from additional discoveries in old fields, largely based on re-examination of pre-

viously collected geoscience data. These data will become even more important in the future with development of new recovery technologies.

The research funded by DOE leads to new technologies that improve the efficiency and productivity of the domestic energy industry. Continued research on fossil energy is critical to America's future and should be a key component of any national energy strategy. The societal benefits of fossil energy R&D extend to such areas as economic and national security, job creation, capital investment, and reduction of the trade deficit. The Nation will remain dependent on petroleum as its principal transportation fuel for the foreseeable future and natural gas is growing in importance. It is critical that domestic production not be allowed to prematurely decline at a time when tremendous advances are being made in improving the technology with which these resources are extracted. The recent spike in oil and natural gas prices is a reminder of the need to retain a vibrant domestic industry in the face of uncertain sources overseas. Technological advances are necessary to maintaining our resource base and ensuring this country's future energy security.

DOE OFFICE OF SCIENCE

The DOE Office of Science is the single largest supporter of basic research in the physical sciences in the United States, providing more than 40 percent of total funding for this vital area of national importance. The Office of Science manages fundamental research programs in basic energy sciences, biological and environmental sciences, and computational science and, under the President's budget request, would be grown by 14 percent from about $3.6 billion last year to $4.1 billion. AGI asks that you support this much needed increase.

Within the Office of Science, the Basic Energy Sciences (BES) program supports fundamental research in focused areas of the natural sciences in order to expand the scientific foundations for new and improved energy technologies and for understanding and mitigating the environmental impacts of energy use. BES also discovers knowledge and develops tools to strengthen national security.

The Basic Energy Sciences (BES) would remain the largest program in the office with an increase of 25 percent from $1.134 billion in fiscal year 2006 to $1.420 billion in fiscal year 2007 in the President's request. Within the BES, Chemical Sciences, Geosciences and Biosciences would receive a $47.9 million increase over their fiscal year 2006 budget. About half of this increase would go toward the President's Hydrogen Initiative ($6 million increase) and basic research related to energy technologies ($22.4 million increase) and the other half would go toward nanoscale science research ($22.2 million increase). Other programs would be reduced by $3.2 million to make up the difference between these increases and the overall budget.

AGI strongly supports the requested increases for these programs.

Thank you for the opportunity to present this testimony to the subcommittee.

PREPARED STATEMENT OF THE ENERGY SCIENCES COALITION

Chairman Domenici, the Energy Sciences Coalition (ESC) expresses its great appreciation for the leadership you have shown as Chairman of the Energy and Water Development Appropriations Subcommittee. We applaud your vision of how the programs of the Department of Energy's Office of Science will lead to research discoveries and technological developments benefiting this and future generations.

The Energy Sciences Coalition is a broadly-based organization representing scientists, engineers and mathematicians in universities, industry, professional societies and national laboratories. We share your belief that the research supported by the Office of Science has and will make significant contributions to our Nation's security and standard of living.

ESC strongly and enthusiastically supports the President's fiscal year 2007 budget request of $4.1 billion for the Department of Energy's Office of Science. This historic level of funding, outlined in the President's American Competitiveness Initiative, will allow the DOE to move forward with the tremendous scientific opportunities outlined in the Office of Science Strategic Plan and in its 20-Year Scientific Facilities Plan. It is also consistent with your PACE legislation and with the recommendations made by the National Academies' in its report, "Rising Above the Gathering Storm."

ESC believes that this landmark request is solid and necessary to keep United States science and engineering at the forefront of global research and development in the physical and biological sciences, computing and many other critical scientific fields. It is an investment in our future.

Our Nation benefits not only from the discoveries that will be made with this support, but also from the training of America's next generation of researchers. Such

training will be instrumental in maintaining our Nation's technological superiority in the international marketplace. The Office of Science also plays an extremely important and unique role in the design, construction, and operation of large-scale user facilities used by researchers supported by the Department of Energy, the National Institutes of Health and the National Science Foundation, as well as private industry researchers.

In closing, I again express the Coalition's gratitude for the leadership that you and your colleagues have demonstrated in supporting the important work of the Office of Science. Please do not hesitate to contact me if the Coalition can be of any assistance.

ATTACHMENT: FISCAL YEAR 2007 ENERGY SCIENCES COALITION FUNDING STATEMENT

Support the President's Request for $4.1 Billion for the Department of Energy (DOE) Office of Science

The Energy Sciences Coalition (ESC) strongly and enthusiastically supports the President's fiscal year 2007 budget request of $4.1 billion for the Department of Energy (DOE) Office of Science, a 14.1 percent increase above the fiscal year 2006 funding level. This historic level of funding outlined in the President American Competitiveness Act will allow the DOE to move forward with the tremendous scientific opportunities outlined in the Office of Science Strategic Plan and in its 20-Year Scientific Facilities Plan. It is also consistent with bipartisan legislation introduced in Senate (the "Protecting America's Competitive Edge" Act, or PACE legislation) and by recommendations made by the National Academies in its report, "Rising Above the Gathering Storm".

ESC believes that this landmark request is solid and necessary to keep United States science and engineering at the forefront of global research and development in the physical and biological sciences, computing and many other critical scientific fields. It is an investment in our future.

The mission of the Office of Science is to deliver the discoveries and scientific tools that transform our understanding of energy and matter and advance the national, economic and energy security of the United States. The DOE Office of Science is one of the primary sponsors of basic research in the United States, leading the Nation in its support for the physical sciences and critical to other fields such as computing and biology. Strong support for DOE scientific research is essential to advancing a broad array of research subjects in order to improve our energy, economic and national security and in addressing the ancillary issues such as super computing, nanotechnology, environmental remediation, climate change, genomics and life sciences.

ATTACHMENT: STATEMENT ENDORSEES

Fiscal Year 2007 ESC Funding Statement Endorsements

Alliance for Science & Technology Research; American Institute for Medical and Biological Engineering; American Institute of Physics; American Physical Society; American Society for Microbiology; American Society of Agronomy; American Society of Plant Biologists; American Society of Mechanical Engineers; Association of American Universities; Biophysical Society; Crop Science Society of America; Federation of Materials Societies; Florida State University; Fusion Power Associates; General Atomics; Indiana University; International Society for Optical Engineering; Iowa State University; Michigan State University; National Association of State and Land-Grant Universities; Ohio State University; Oregon State University; Princeton University; Rensselaer Polytechnic Institute; Soil Science Society of America; Southeastern Universities Research Association; Stanford University; University of California; University of Chicago; University of Tennessee; University of Wisconsin-Madison.

PREPARED STATEMENT OF THE INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA

Members: The International Association Of Drilling Contractors; The International Association of Geophysical Contractors; The National Stripper Well Association; The Petroleum Equipment Suppliers Association; The Association of Energy Service Companies; Public Lands Advocacy; California Independent Petroleum Association; Colorado Oil & Gas Association; East Texas Producers & Royalty Owners Association; Eastern Kansas Oil & Gas Association; Florida Independent Petroleum Association; Illinois Oil & Gas Association; Independent Oil & Gas Association of New York; Independent Oil & Gas Association of Pennsylvania; Independent Oil & Gas Association of West Virginia; Independent Oil Producers Association Tri-State;

Independent Petroleum Association of Mountain States; Independent Petroleum Association of New Mexico; Indiana Oil & Gas Association; Kansas Independent Oil & Gas Association; Kentucky Oil & Gas Association; Louisiana Independent Oil & Gas Association; Michigan Oil & Gas Association; Mississippi Independent Producers & Royalty Association; Montana Oil & Gas Association; National Association of Royalty Owners; Nebraska Independent Oil & Gas Association; New Mexico Oil & Gas Association; New York State Oil Producers Association; Northern Alliance of Energy Producers; Ohio Oil & Gas Association; Oklahoma Independent Petroleum Association; Oklahoma Commission on Marginally Producing Oil and Gas Wells; Panhandle Producers & Royalty Owners Association; Pennsylvania Oil & Gas Association; Permian Basin Petroleum Association; Petroleum Association of Wyoming; Tennessee Oil & Gas Association; Texas Alliance of Energy Producers; Texas Independent Producers and Royalty Owners; Virginia Oil & Gas Association; and the Wyoming Independent Producers Association.

These organizations represent petroleum and natural gas producers, the segment of the industry that is affected the most when national energy policy does not recognize the importance of our own domestic resources. Independent producers drill 90 percent of domestic oil and natural gas wells, produce approximately 82 percent of domestic natural gas, and produce about 68 percent of domestic oil—well above that percentage of the oil in the lower 48 States.

Thank you for the opportunity to provide input on the critical need for the Department of Energy's Office of Fossil Fuels Oil and Natural Gas Technologies programs. The Independent Petroleum Association of America (IPAA), represents over 5,000 producers of domestic oil and natural gas. Independents drill 90 percent of the Nation's oil wells and produce 82 percent of the Nation's natural gas and 68 percent of domestically-produced oil. IPAA urges the subcommittee to maintain funding for the Department of Energy's (DOE), Office of Fossil Fuels Oil and Natural Gas Technologies programs at $64 million, the appropriated level for fiscal year 2006. In addition, IPAA urges the subcommittee to fund the non-conventional onshore/ultra-deepwater/small producer program and the methane hydrates technology program at the authorized levels included in the Energy Policy Act of 2005 ($100 million and $20 million respectively.)

IPAA is concerned that the administration's "zero" budget request for the Department of Energy's oil and natural gas technologies programs for fiscal year 2007 will diminish the development of key exploration and production technologies designed to improve domestic oil and natural gas production.

This is the second year that the administration has proposed to terminate funding for these vitally important programs, 85 percent of which historically have focused on exploration and production activities associated with independent producers. In most instances, these companies do not have access to the in-house technology development capabilities of the larger, integrated, multi-national oil companies. Therefore, federally funded research and development (R&D) should be considered essential to maintain a viable, robust, domestic producing sector.

With respect to both the non-conventional onshore/ultra-deepwater/small producer program and the methane hydrates program the administration included language in its budget request to repeal the former, and to provide no funding for the latter, though both are authorized in the Energy Policy Act of 2005. IPAA believes that these programs will play a crucial role, if we are to reduce our energy dependence in the years to come.

Full, consistent funding for development of all these programs is essential to meet the President's objectives to reduce our dependency on foreign sources of energy. In the case of the existing oil and gas technologies programs, they have provided a variety of functions, primarily focusing on domestic exploration and production research and development activities, resulting in sustaining and in most instances, increasing domestic oil and gas production. Such research and development activities, conducted by universities, DOE laboratories and the private sector have culminated in the development of exploration and production (E&P) technologies, which have resulted in an increase in production of product, in a more environmentally sensitive manner, with a much smaller environmental footprint.

In a statement issued on October 17, 2005, in conjunction with DOE's announcement of 13 new oil and gas technologies/R&D projects, Secretary of Energy Samuel Bodman said, "This administration continues to seek out and develop new energy options to support our growing economy." He continued, "The projects we are funding today are an investment in our Nation's energy security and economic security, and will help us obtain the maximum benefit of our domestic energy resources in an environmentally sensitive way."

The statement went on to point out that the sources of unconventional natural gas that these projects would assist in the development of contain an estimated 700

trillion cubic feet (Tcf), compared to an industry estimate of 190 Tcf in conventional natural gas reserves.

The statement also attempted to put into context the significance of accessing these reserves, noting that "natural gas accounts for nearly one quarter of total domestic supply, a share that will rise with future technological advancements such as those being investigated by the funded projects."

Similarly, development of methane hydrates and non-conventional onshore/ultra-deepwater represents tremendous potential for supplying America's growing natural gas needs. In the case of methane hydrates, the U.S. Geological Survey (USGS) estimates the United States to have about 200,000 trillion cubic feet of methane hydrate. Meanwhile, the ultra-deep area alone will tap 1,300 trillion cubic feet of technically recoverable reserves—enough to meet 60 years of demand at current rates of consumption.

DOE's programs play an essential role in the training and development of qualified people for the oil and gas sector, a challenge which continues to grow at an alarmingly rapid rate. The DOE oil and natural gas programs provide vital support to petroleum engineering departments across the country. According to a letter dated April 4, 2005 from the University of Texas' Department of Petroleum and Geosystems Engineering to the Subcommittee on Energy and Water Development Appropriations, ". . . our ability to retain the best faculty who are needed to train Petroleum Engineers for the coming decades depends entirely on our being able to provide research funding to the faculty." The letter goes on to say, "Lacking this opportunity, there will not be many viable petroleum engineering programs left in the U.S." Ironically, this statement is reflective of goals that are outlined in the recently introduced Protecting America's Competitive Edge Act (PACE), and the President's American Competitiveness Initiative.

IPAA commends the President's laudable goal expressed in his recent "State of the Union" address, in which he laid out a "game plan" of appreciably reducing our dependency on foreign sources of oil by 2025. However, our Nation's economy is currently fossil fuel "dependent"—65 percent of domestic energy supply coming from oil and natural gas—and will continue to be for the foreseeable future. Therefore, the Nation finds itself at a time when concern over increasing dependence on foreign oil is at an all time high, escalating fuel prices are running roughshod over the American consumer in the form of home heating bills and gasoline prices, and businesses are relocating and taking valuable jobs overseas with them in the pursuit of affordable fuel costs. The administration's failure to recognize the importance of investing in oil and natural gas R&D to develop critically-needed recovery technologies is all the more perplexing. Domestic oil and natural gas reserves should be front and center in any balanced national energy policy, treated comparably with renewable energy sources, coal and nuclear. Yet, the administration would essentially eliminate oil and natural gas from DOE's energy portfolio.

IPAA urges the committee to support full funding for these vital programs.

PREPARED STATEMENT OF THE CENTER FOR ADVANCED SEPARATION TECHNOLOGIES, VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Chairman Domenici and members of the subcommittee, I represent the Center for Advanced Separation Technologies (CAST), which is a consortium of seven leading U.S. mining schools. I appreciate the opportunity to submit this testimony requesting your committee to add $3 million to the 2007 Fossil Energy Research and Development budget, U.S. Department of Energy, to support CAST. Research in advanced separations is an integral part of the President's Hydrogen from Coal Research Fuels Initiative, and is critical for the continued supply of energy for economic growth and strategic minerals for national security.

I am joined in this statement by my colleagues from the consortium: Ibrahim H. Gundiler, New Mexico Tech; Maurice C. Fuerstenau, University of Nevada-Reno; Richard A. Bajura, West Virginia University; Peter H. Knudsen, Montana Tech of the University of Montana; Richard J. Sweigard, University of Kentucky; and, Jan D. Miller, University of Utah.

FUNDING REQUEST FOR THE CENTER FOR ADVANCED SEPARATION TECHNOLOGIES

The Center for Advanced Separation Technologies (CAST) is a consortium of the seven universities listed above. It was formed in 2001 to develop advanced technologies that can be used to efficiently produce cleaner fuels in an environmentally acceptable manner and to study the basic sciences and engineering involved. The new technologies developed as a result of CAST research and the highly skilled personnel trained during the course of its activities will help the United States meet

the challenges of energy independence. These missions are consistent with President Bush's American Competitiveness Initiative, announced in his 2006 State of the Union Address. The President's new program includes doubling R&D commitments to basic research, supporting universities for world-class education and research opportunities, and training a work force with skills that can be used to better compete in the 21st century.

ORGANIZATION

The Center for Advanced Separation Technologies (CAST) was formed initially between Virginia Tech and West Virginia University with the objective of developing advanced solid-solid and solid-liquid separation technologies that can help the U.S. coal industry produce cleaner solid fuels. In 2002, five other universities listed above joined the consortium to develop crosscutting technologies that can also be used in the U.S. minerals resources industry. As a result, the scope of CAST research was expanded to studies of chemical/biological separations and environmental control.

As a consortium, the Center can take advantage of the diverse expertise available in the member universities and address the interests of the different geographical regions of the country. Working together as a consortium is consistent with the recommendations of a recent National Research Council (NRC) report on the U.S. Department of Energy's fossil energy research, which states that "consortia are a preferred way of leveraging expertise and technical inputs to the mining sector," and recommends that DOE should support "academia, which helps to train technical people for the industry."

PROGRESS AND NEXT STEP

At present, a total of 45 research projects are being carried out at the seven CAST member universities. Of these, 12 projects are in solid-solid separation, 5 in solid-liquid separation, 12 in chemical/biological separation, 7 in modeling and control, and 6 in environmental control. The project selection was made by an industry panel according to the priorities set forth in the CAST Technology Roadmap developed in 2002 by industry representatives. Research results have been presented at two workshops, the first in Charleston, WV, November 19–21, 2003, and the second in Blacksburg, VA, July 26–27, 2005. Both meetings enjoyed strong participation from industry. The third workshop will be held in July 2007 in Blacksburg.

CAST research has been focused on removing impurities (e.g., ash, sulfur, mercury and other toxic elements) from coal. Various solid-solid and solid-liquid separation technologies are used to remove these impurities. In general, the efficiency of separation diminishes sharply with decreasing particle size. As a result, coal companies discard coal fines to impoundments. In the United States, approximately 70 to 90 million tons of coal fines are being discarded annually according to a National Research Council report. The report was issued as a result of a congressional directive to investigate a major failure of a fine coal impoundment in Kentucky in October, 2000, which caused 300 million gallons of coal sludge to flood an active mine and neighboring creeks and rivers. There are more than 713 active water and slurry impoundments in the eastern United States, many of which are rated "high risk." The report suggested a study to identify appropriate technologies that can eliminate the need for slurry impoundments.

CAST has been developing advanced separation technologies that can help U.S. coal companies recover fine coal rather than discard it to impoundments. One company, Beard Technologies, Inc., is currently building a plant designed to recover fine coal from a large impoundment in Pineville, WV, using the technologies developed by CAST. The plant will be the first to recover practically all of the coal from a waste impoundment without the benefit of a tax credit. If the project is successful, it is anticipated that many other companies will follow suit. The enabling technology used in the Pineville recovery plant is the use of chemical additives that can remove moisture from fine coal during vacuum filtration. CAST is developing several other dewatering technologies, which include hyperbaric centrifuge, hyperbaric horizontal belt filter (HHBF), and a flocculant injection system. In a recent pilot-scale test conducted with the hyperbaric centrifuge, it was possible to reduce the moisture of a fine coal (smaller than 0.15 mm) to below 10 percent by weight without using chemical additives. The technology has been licensed to Decanter Machine Company, Johnson City, TN, which plans to construct a prototype unit for onsite testing. Development of the HHBF technology is also making progress. Construction of a pilot-scale test unit has been completed, and is ready for a trial. This new dewatering technology is also designed to reduce fine coal moisture to less than 10 percent. The flocculant injection system is already in use by many coal companies to minimize the loss of fine coal associated with the use of screen-bowl centrifuges, which rep-

resent the most widely-used conventional dewatering technology in the U.S. coal industry. In addition, Arch Coal Company is seriously considering installation of a deep-cone thickener, as a result of the work conducted at CAST, to obviate the need to build a fine coal impoundment.

Despite the importance of fine coal cleaning, the bulk of the coal being cleaned today is coarse coal, most of which is being cleaned of impurities using density-based separation methods. Therefore, there is an interest in determining separation efficiencies using density tracers. Typically, plastic blocks of known densities are added to a feed stream, collected manually from product streams, and counted to determine the efficiency of separation—a process which is cumbersome and entails inaccuracies. Therefore, a new method has been developed in which each tracer is tagged with a transponder so that the destination of each tracer can be monitored electronically. The new technique has been tested successfully in several plants and is ready for commercial deployment. Precision Testing Laboratory, Beckley, WV, plans to market the new technology. Its use can help coal companies maximize the efficiency of cleaning coarse coal.

Much of the basic scientific principles and technologies involved in coal cleaning also apply to processing ores. Therefore, CAST has been developing crosscutting technologies that can be used in both coal and minerals industries. As an example, a joint Krebs Engineers-CAST research resulted in the development of a novel hydrocyclone that can efficiently remove clay (slimes) from coal. The same technology can also be used in processing many industrial minerals. For instance, removal of clay minerals is an *a priori* requirement in processing the potash (KCl) ores in New Mexico. Laboratory experiments showed that more efficient desliming can increase potash recovery by 4 to 6 percent downstream. Implementation of these new technologies being developed at CAST will help the industry remain competitive against foreign producers and retain high-paying jobs in the country.

The United States is the second-largest copper producer in the world. However, much of the ores being mined are low grade, which makes it difficult for U.S. companies to compete internationally. Traditionally, copper is extracted from an ore through a series of processes, including grinding, flotation, smelting, and refining, which are energy-intensive and hence costly. CAST is currently developing new technologies to facilitate the application of alternative leaching/impurity removal/electrowinning processes that can replace the costlier steps of grinding, flotation, smelting, and refining. The alternative processes should require substantially lower capital costs and reduce energy consumption by 50 percent.

The mining industry has been extracting gold using cyanide, which is toxic. Therefore, CAST has been developing an environmentally benign extraction method using alkaline sulfide. Bench-scale continuous tests conducted using this new lixiviant showed that the extraction efficiency is as good as those obtained using cyanide.

In addition to the more practical projects described above, CAST has also conducted fundamental research. As an example, a mathematical model has been developed to describe the flotation process, which is the most widely-used and versatile solid-solid separation process used in both the coal and minerals industries. The model is based on first principles so that it has predictive and diagnostic capabilities. In another project, a computational fluid dynamic (CFD) simulation technique has been used to design optimal flotation machines. This project is co-funded by Dorr-Oliver EIMCO, Utah. In addition, the surface forces acting between two microscopic surfaces immersed in water have been measured using the atomic force microscope (AFM) and the surface force apparatus (SFA). The results show that strong attractive forces are present between hydrophobic surfaces, the origin of which is not yet known. The newly-discovered surface forces, which are referred to as "hydrophobic force" play an important role in the separation of hydrophobic energy "minerals" such as coal, oil, bitumen, and kerogen from hydrophilic waste minerals such as clay, silica and others.

FUNDING REQUEST AND RATIONALE

The United States is by far the largest mining country in the western world, followed by South Africa and Australia. In 2004, the U.S. mining industry produced $63.9 billion of raw materials, including $19.9 billion of coal and $44 billion of minerals. Australia is a smaller mining country but has five centers of excellence in advanced separations as applied to coal and minerals processing. Last year, Australia established the Mineral Science Research Institute, a consortium of four mining schools, with a funding of $22.6 million for the initial 5-year period. In the United States, CAST is the only federally-funded consortium serving the mining industry. According to a congressional testimony by K. Mark Le Vier, President of the Mining

and Metallurgical Society of America, 50 percent or more of the faculty in the U.S. mining schools will retire in the next 5 years. Continued funding of the CAST program is critical for producing a trained workforce for the industry.

CAST has been developing a broad range of advanced separation technologies. Although it is a relatively new research center, some of the projects have yielded technologies that are already in use in industry. Many other promising research projects are on-going and require continued support. Working as a consortium is an effective way of exchanging ideas and utilizing diverse expertise required to solve major problems. Continued funding will allow CAST to develop advanced technologies that can be used to produce cleaner coal in an environmentally acceptable manner. Furthermore, the advanced technologies can be used not only to clean up the troublesome waste impoundments that have been created in the past but also to eliminate the need to create them in the first place.

For fiscal year 2007, CAST is requesting $3 million to (i) develop crosscutting separation technologies, (ii) better understand the basic sciences involved, and (iii) produce highly-skilled engineers and scientists. Although the aim of the proposed research is to benefit the U.S. mining industry, its results should also help the President's initiatives to develop a hydrogen economy and to produce biofuels more efficiently (e.g., separating ethanol from water without distillation). Further, the results can be used to develop technologies for extracting kerogen from oil shale, of which the United States has 72 percent (1.2 trillion barrel equivalent of oil) of the world's reserves. A steady supply of fuels and strategic minerals is critical for the continued growth of the economy and for national security.

Prepared Statement of Fusion Power Associates

In marking up the fiscal year 2007 budget for the Dept. of Energy, NNSA, Inertial Confinement Fusion Program, I strongly urge you to provide funds, unrequested by the DOE, for Z-pinch repetitively pulsed power program (approximately $15 million) at Sandia National Laboratories and for High Average Power Laser efforts (approximately $25 million). The Congress has supported the High Average Power Laser program for several years. The Z-pinch repetitively pulsed power program was funded by Congress in fiscal year 2005 but was not specifically funded in fiscal year 2006 and hence was drastically reduced this year.

These programs are needed to capitalize on the successes of the NNSA single pulse inertial confinement fusion efforts for weapons research so that the technology will be available in a timely manner for energy applications.

Thank you for your consideration.

Prepared Statement of the Great Basin Center for Geothermal Energy, University of Nevada, Reno

Senate Energy and Water Subcommittee, our need for energy independence and indigenous energy sources has never been greater, yet the U.S. DOE funding for geothermal energy research appears to be in jeopardy in fiscal year 2007. As part of a comprehensive energy plan, geothermal energy, among other renewable energy resources, must be utilized to help offset fossil fuel uses, diversify the Nation's power supply, and provide base load power. Geothermal energy should be one component of a well-balanced implementation of the National Energy Policy. As the National Research Council concluded (Renewable Power Pathways, 2002), given the enormous potential of the geothermal resource base, research by the U.S. DOE should be increased, particularly into technologies that can reduce risk, reduce costs, or expand the accessible geothermal resource base.

As a personal supporter of geothermal and renewable energy sources, and as a long-time researcher in geothermal energy, I urge your support of renewable energy sources in the coming budget cycles. We need to increase, not decrease, geothermal energy support in the Department of Energy. I express my support here for funding DOE's geothermal research efforts in fiscal year 2007 and beyond at no less than $30 million. The currently funded research at the Great Basin Center for Geothermal Energy has found, and continues to find, new geothermal resources in the Great Basin and we have developed new technologies to locate, characterize and assess these resources with a relatively small investment from the DOE geothermal technologies program. These programs should be continued, and development of geothermal resources accelerated. We should also continue evaluating geothermal energy for the production of hydrogen, for which there is currently an actively-funded research program here at UNR. Continued geothermal research will benefit the in-

dustry, and a robust geothermal industry will greatly contribute to alleviating national security energy concerns.

Thank you for consideration of this matter.

PREPARED STATEMENT OF DAVID J. BARDIN

Mr. Chairman and members of the subcommittee, as a private citizen who served at DOE during its formation, I urge you to:

—(A) Restore Office of Fossil Energy funding, that the administration proposed to zero out, for petroleum research and development (including CO_2–EOR) and petroleum technology transfer to independent oil producers and others, and

—(B) add $4 million, half to OFE and half to the Energy Information Administration:

—(1) to enhance OFE and EIA capabilities to assess domestic oil resources and recovery potentials—especially for production of liquid fuels from "continuous-type" formations that are scarcely touched today—and,

—(2) to stand up a "Red Team" (a) to challenge conventional-wisdom "Blue Team" projections that lower-48 States onshore production will inevitably decline from year to year and (b) to identify in timely fashion critical infrastructure issues that significant growth potentials will likely raise.

A new crude oil production "play" in Montana and North Dakota (depicted this month by the Wall Street Journal[1]) illustrates compelling reasons for these recommendations.

BAKKEN FORMATION OF THE WILLISTON BASIN

Montana's production from the Bakken formation has more than doubled each year since discovery of the Elm Coulee Field in 2000, averaging 43,000 bbl per day during 2005, and exceeding 50,000 bbl per day by year end.[2] This is already the largest onshore discovery in the lower-48 States in half a century; it is still growing. ND Bakken production is also up. OFE recently released a report[3] noting that studies have suggested as much as 150 billion barrels (perhaps more) of total resources in place in just the North Dakota portion of the Williston Basin's Bakken. The Wall Street Journal reported an unpublished estimate of more than 200 billion barrels of recoverable oil in place.[4]

The 13 operators involved in MT's Elm Coulee field are independents.[5] None of the oil industry giants is involved in the Bakken play; those giant companies concentrate their efforts on multi-billion-dollar projects overseas, in Canada, or in the deep waters of the Gulf of Mexico. Today's MT and ND play, where a well may cost a few million dollars, can produce enough to affect an independent's "bottom line"—but not a giant's.

RESTORE OFE BUDGET

Dry holes are virtually unknown in the continuous-type Bakken Source System, but profitable production depends on applying technologies that will work for this resource. Some of the technologies are ready today—if brought to the attention of the operators.

The Petroleum Technology Transfer Council engages in just that valuable work, for the Bakken resources (and others), yet the administration unwisely proposes to zero out Federal support for the PTTC (which is primarily funded through OFE's budget).[6]

Moreover, more R&D is still needed to adapt technologies to the circumstances of the Bakken—with plenty of trial and error in all likelihood. Otherwise 80–98 percent of the oil may remain stranded in the rocks.[7] Yet the administration would zero out R&D.

Congress should make funds available to OFE, at least at last year's level, to sustain technology transfer and help solve R&D challenges, on a matching basis. Federal funding to support onshore innovations is justified, particularly where independents are leading the way.

Ideally, Congress should assure dedicated funding for onshore oil and associated gas R&D (as well as non-associated gas funding, such as the Gas Research Institute used to provide). Past industry and DOE efforts succeeded in showing how to produce more domestic non-associated gas resources—notably including such continuous-type resources as coal bed methane and the Antrim Shale of the Michigan Basin; and most recently the Barnett and Bossier Shales.[8] The MT and ND Bakken resources invite similar breakthroughs for continuous-type crude oil resources.

ENHANCE EIA AND OFE BUDGETS

Congress should also make new funds available to EIA and OFE in order to enable DOE to provide critically important information—to the investment community as well as independent producers. Restoration of EIA capabilities might produce dividends of strategic importance to our country over the next half century. A "Red Team" of OFE and EIA (and possibly others) might help avoid painful surprises—e.g., by exposing risks that transportation infrastructures may be inadequate to serve increases in production.

Frankly, EIA projections (in all cases examined) now discourage investments—both in production and in transportation facilities—by seeming to show that domestic, on-shore, lower-48 production must decline steadily over 25 years from close to 3 million barrels a day to barely 2 million. Is that necessarily so?[9]

EIA models for crude oil production rely on extremely cautious assessments of technically-recoverable resources by the USGS. In contrast, EIA independently (and less cautiously) models non-associated natural gas resources and recoverability. Some OFE assessments (integral to research program efforts) may also have been modestly more progressive than USGS's.

The estimate of total U.S. technically recoverable crude oil resources on which EIA relies (175 billion barrels) includes barely 2 billion barrels in continuous-type deposits such as the Bakken.[10] Contrast Leigh Price's estimate (held back by USGS) of over 200 billion barrels of technically recoverable resource in the Bakken continuous-type deposit alone. The discrepancy begs for frank acknowledgement and rigorous investigation.

It is too many years since DOE prepared its own crude oil resource assessment. The Bakken Source System offers a fine opportunity to try out a DOE alternative to USGS. The current MT and ND Bakken play has already increased domestic oil production at an important time for our country and demonstrated that the 1995 USGS estimate (still used by DOE) is far too low.[11]

Congress should direct OFE, working with EIA, to perform a resource appraisal of the Bakken Source System of the MT and ND portions of the Williston Basin as an example of continuous crude oil resources in a self-sourced reservoir. Such reservoirs:

—represent a large portion of what is left to be found on-shore in the lower-48 States generally and in the Rocky Mountain region particularly;
—are under-studied; and
—have a significant potential that may not have been adequately characterized in the past.

OFE has performed similar appraisals as part of its research program. EIA used to perform such appraisals for foreign resources in Russia, the Middle East, and other areas.

A new appraisal of these ND and MT resources here at home could be important in and of itself as well as an exciting experiment that may be applicable elsewhere in the lower-48 States, especially the Rocky Mountain region. I envisage a series of reports:

—Step one, the easiest, would simply rerun EIA long-term projections substituting an assumed increment of Rocky Mountain technically recoverable Bakken oil resource over and above the USGS assessment.
—Step two would arrive at an EIA/DOE estimate (or range) weighing various studies suggesting over 150 billion barrels of Bakken oil in place, including Price's 5-year-old estimate of 413 billion barrels in place of which half is technically recoverable. This step will want a "Red Team" assigned to challenge and debate conventional "Blue Team" views within DOE.
—Step three would consider how EIA's existing models would handle a huge increase in assessed lower-48 resources.
—Step four would ask whether EIA's existing models deal adequately with issues such as expansion of crude oil pipeline capacity and competition between USA oil production and syn-crude and other crude oils exported by Canada. EIA would do well to enlist expertise of USGS and others on such issues.
—Step five might lead to modifications of EIA models.
—Step six could entail OFE assessments of technically recoverable resources using "next generation" CO_2 and other enhanced oil recovery technologies to more fully recover vast Bakken oil resources.
—Seventh, and most important, would be DOE leadership to identify, in cooperation with the States of Montana and North Dakota and industry (and our Canadian friends), potential prerequisites for bringing barely tapped resources to market (e.g., increasing availability of geologic and other data, learning lessons from Bakken well histories, deploying advanced production technologies, plan-

ning for expanded infrastructure on a timely basis) and to foster effective basin-specific moves to get on with the job.

Congress should fund restoration of EIA's capacity to monitor and inform about technology innovations in the oil and gas production industry. Such information could improve EIA's take on recoverability of resources for its long-term projections.

Technology goes to the heart of energy performance. Yet no one can really evaluate USGS technology assumptions because USGS won't disclose estimates of resources in place. An alternative DOE assessment of the Bakken should certainly be transparent as to resources in place, thereby challenging people inside and outside the industry to invent ways to enhance recovery factors.

The bottom line goes far beyond assembling information. We want (a) to understand more fully the value of our Nation's untapped oil resources in the overall public interest in the broadest sense—including oil resource in the Bakken (very little of which involves federally-owned land)—and (b) to anticipate downstream issues, such as today's impact of Canadian upgraded syn-crude, diluted bitumens, and heavy oils.

CONCLUSION

In the face of energy uncertainty and insecurity, Congress should fund and demand more R&D, technology transfer, and information about domestic crude oil potentials and challenges because:

—so much domestic oil remains stranded;

—supporting R&D and technology transfer can help mobilize those resources;

—giant oil companies, on whom the administration would rely, don't do enough;

—too much of our domestic resources are unknown to Congress and the public;

—we now project undue helplessness to ourselves, our friends, and our enemies.

Thank you.[12]

END NOTES

[1] "Second Look: WILDCAT PRODUCER SPARKS OIL BOOM ON MONTANA PLAINS: After Majors Pulled Out, Mr. Findley Drilled Anew; Size of Find Still Unclear", WSJ Apr. 5, 2006, p. A1.

[2] On April 9 the American Association of Petroleum Geologists conferred its Outstanding Explorer Award on Richard L. "Dick" Findley of Billings, MT, in recognition of outstanding achievement in exploration for petroleum—citing him as "an intrepid oil finder, accomplished stratigrapher, and entrepreneur for his efforts and imagination in discovering the 'sleeping' giant Elm Coulee oil field in the Bakken Formation, Williston Basin, Richland County, Montana."

[3] Advanced Resources International, February 2006, Basin Oriented Strategies for CO_2 Enhanced Oil Recovery: Williston Basin, prepared for the Department of Energy Office of Fossil Energy, part of a series on increasing domestic oil production.

[4] A comprehensive geological report by Leigh C. Price (a USGS scientist for 27 years), documented his estimate of 413 billion barrels in place and suggested why over half could be recovered. After Price's untimely death in August 2000, USGS "misplaced" that document, but the Energy and Environmental Research Center of the University of North Dakota has posted it as a free download at www.undeerc.org, and the Petroleum Technology Transfer Council has posted a link among its rich collection of Bakken case studies. See www.mines.edu/research/PTTC/("Seminal Bakken Paper"). Price, L.C. "Origins and Characteristics of the Basin-Centered Continuous Reservoir Unconventional Oil-Resource Base of the Bakken Source System, Williston Basin".

[5] *Source*.—Jim Halvorson, MT Oil & Gas Conservation Board.

BAKKEN CRUDE OIL—ANNUAL PRODUCTION—ELM COULEE FIELD [BBL/YR]

Company Name	2000	2001	2002	2003	2004	2005
Armstrong Operating, Inc.	.....	11,281	21,774	22,562	29,748	35,018
Burlington Resources Oil & Gas Company LP	.....	.....	.....	.....	218,066	1,323,852
Chaparral Energy, LLC	.....	.....	.....	.....	.....	96,654
Continental Resources Inc	.....	.....	.....	90,101	853,228	2,810,965
EOG Resources, Inc.	.....	.....	.....	73,824	660,040	1,018,896
Headington Oil LP	.....	20,788	145,610	1,293,039	2,554,072	3,675,139
Lyco Energy Corporation	21,164	245,715	630,691	1,147,021	2,406,618	4,035,471

BAKKEN CRUDE OIL—ANNUAL PRODUCTION—ELM COULEE FIELD [BBL/YR]—Continued

Company Name	2000	2001	2002	2003	2004	2005
Nance Petroleum Corporation				34,665	241,559	807,487
Petro-Hunt, LLC				48,883	308,299	376,506
Slawson Exploration Company Inc					99,900	815,272
Staghorn Energy, LLC					53,342	20,942
Stone Energy Corporation						214,252
Westport Oil And Gas Co., L.P.					140,254	483,059

[6] See www.pttc.org and PTTC's Rocky Mountain regional page, cited in note 4, for examples of presentations on Bakken oil geology and technology at Rocky Mountain forums. See "World Oil"'s March 2006 issue for important hands-on technology information that the PTTC helps to publish and spread. T. Lantz and C.B. Wiley, "Learning process optimizes horizontal drilling and completion techniques" also posted at http://www.pttc.org/case_studies/PTdigest03-06.htm.

[7] The current play started with one horizontal well (10,000 feet deep vertically extending 4,000 feet laterally) completed in Richland County, MT, in the year 2000. That well aimed at brittle, dolomite rocks adjacent to the more plastic Bakken shale and used a brand-new technology to fracture the lateral part of the well (a method of stimulation that the operator recently repeated). These 13 operators invested successfully, seeking oil in the most prolific part of the Bakken Source System (the adjacent brittle rocks) while avoiding the shale itself (at which a previous, disappointing horizontal play had aimed). With the help of service companies, they apply new technologies that are readily transplanted to their wells (notably fracturing a lateral well bore). But the next step demands costly trial and error experiments to figure out how best to enhance production of different parts of the overpressured Bakken Resource System oil. For example, maximum crude oil recovery calls for injecting a fluid, such as carbon dioxide, into rocks in order to maintain reservoir pressures and flow of the oil. During trial and error, some operators have to give up a part of their land holdings, some of their wells, surrendering their production today to experiment for the future of everyone in the industry—with no certainty of success.

[8] National Research Council, 2001, Energy Research at DOE: Was It Worth It?—Energy Efficiency and Fossil Energy Research 1978 to 2000.

[9] *Cf.* McCabe, P.J., 1998, Energy Resources—Cornucopia or Empty Barrel? AAPG Bulletin, v. 82, p. 2110–2134, and Caruso, G., 2005, When Will World Oil Peak? 10th Annual Asia Oil & Gas Conference, Kuala Lumpur, Malaysia.

[10] U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves 2004 Annual Report, App. G, p. G–3. This nationwide 2 billion barrels of continuous-type resources includes USGS estimate of 150 million barrels of undiscovered, technically-recoverable Bakken oil.

[11] The USGS baseline, released in 1995 for the entire Bakken system in MT and ND combined, totaled 150 million barrels of undiscovered, technically-recoverable oil for three sub-areas, with 70 million of those barrels in an "intermediate" area that includes the current MT Bakken play—which has already produced 30 million of those 70 million barrels since 2000. Bakken wells are expected to produce for 25 years or more. Tens or hundreds of billions of barrels of Bakken oil may reside in place—making recovery factors (and technology to enhance recovery) strategically critical.

[12] Mr. Bardin is Of Counsel to Arent Fox Kintner Plotkin & Kahn, PLLC (as a retired member) where he specialized in public utilities, energy and environmental law. Before joining Arent Fox in 1980, he served as Deputy Administrator of the Federal Energy Administration (1977) and Administrator of the Economic Regulatory Administration in the Department of Energy (1977–79).

PREPARED STATEMENT OF THE DETROIT DIESEL CORPORATION

Detroit Diesel Corporation (DDC), a DaimlerChrysler Company, provides this statement for the record addressing the administration's fiscal year 2007 budget request for the Department of Energy's Office of FreedomCAR and Vehicle Technologies (OFCVT). Specifically, the following line items and recommendations are addressed in this statement:

—*Heavy Truck Engine*.—$20.0 million funding recommended;
—*Waste Heat Recovery (21CT)*.—$4.806 million funding recommended;
—*Combustion and Emission Control (21CT)*.—$7.680 million funding recommended;
—*Advanced Petroleum Based Fuels (21CT)*.—$4.511 million funding recommended.

We generally support the administration's budget request for OFCVT, but we respectfully urge the committee to consider further enhancements to critical key line items that require prompt and immediate attention to reduce the U.S. demand for petroleum. These key line items will have immediate near-term impact on energy security, will decrease emissions of criteria air pollutants and greenhouse gases, and will enable the U.S. transportation industry to sustain a strong and competitive position in the domestic and world markets. Specific relevant OFCVT R&D programs enjoy substantial industry cost share demonstrating a matched commitment by the U.S. industry. In order to bring to fruition the intended results, these programs require sustained or increased levels of funding.

DDC's world headquarters and its main manufacturing plant are located in Detroit, Michigan. DDC employs over 4,000 persons who design, manufacture, sell and service engines for the transportation and power markets. Our products cater to heavy-duty trucks, coach and bus, automobiles, construction, mining, marine, industrial, power generation and the military. DDC has operations and manufacturing centers in various regions of the United States, along with a network of over 100 distributors and 2,700 dealers throughout the United States and worldwide. The DDC Series 60 engine has revolutionized the truck engine technology, consistently setting new global performance, fuel economy and life cycle cost standards. It has been the most popular heavy-duty truck engine in the United States for the past 14 years.

As a founding member of the 21st Century Truck Partnership, DDC supports Department of Energy efforts described in Energy Secretary Bodman's comments to the SAE Government Industry meeting on May 10, 2005 that "through the 21st Century Truck Partnership, and similar initiatives, our Department is expanding the use of clean diesel, and helping to reduce our dependence on foreign oil, improve energy efficiency, and develop new, environmentally friendly fuels to power our economy in the 21st century." In this regard, our comments will focus on the program line items that provide substantial potential payback for this important area of national interest.

We generally support the administration's budget request, while respectfully urge the committee to consider further enhancements to the following three line items under the proposed fiscal year 2007 Advanced Combustion Engine R&D program element: Heavy Truck Engine, Waste Heat Recovery, and Combustion and Emission Control, as well as the Advanced Petroleum Based Fuels line item under the Fuels Technology program element.

The Heavy Truck Engine has a fiscal year 2007 request of $14.490 million. The 2010 Federal emissions mandates require an extremely aggressive R&D development plan to identify and implement new technologies. Recent specific findings suggest that EPA's initial estimates have underestimated the negative economic impact of the U.S. 2004 regulations by an order of magnitude. The 2007/2010 mandates will further reduce both NO_X and particulate emissions by an additional 90 percent from the 2004 levels. The technological complexities of meeting highly stringent emissions reduction while maintaining and ultimately improving the fuel economy within an extremely short time frame is the toughest challenge ever faced by the U.S. heavy-duty transportation industry. We believe this provides the strongest rationale for significant increases in government support to these competitively bid, collaborative, 50/50 cost-shared R&D programs. DDC is investigating advanced combustion systems, alternative emissions reduction technologies including engine and exhaust aftertreatment systems, and smart control strategies within an integrated powertrain. We urge the committee to consider increasing the Heavy Truck Engine line item by an additional $5.51 million above the fiscal year 2007 budget request (Total = $20 million) to assert and support the urgency of accelerated development of these related high-risk emerging technologies.

The 21CT portion of the Waste Heat Recovery has a fiscal year 2007 request of $3.806 million. This line item has a potential of making a significant contribution to the overall efficiency of the heavy-duty diesel engine by utilizing the thermal energy of the exhaust gases which is currently lost. DOE's attention to this subject is supported by a number of new collaborative R&D contracts in this area. We believe that the budget should be reflective of the fuel-saving potential of this research, and recommend increasing this line item by $1 million to $4.806 million in fiscal year 2007.

The Combustion and Emission Control activity focuses on the development of advanced emission control technologies for clean diesel engines for U.S. personal transportation vehicle applications as well as a heavy truck component supporting the goals of the 21st Century Truck Partnership. For decades to come, clean diesel engines are the most relevant solution simultaneously offering significant fuel economy savings, reduced exposure to climate change issues and a cleaner environment. Initial developments show potential for lower emissions meeting the mandated 2007/2010 levels while maintaining the diesel engine's inherently superior fuel efficiency. The initial performance results are compelling, but many questions remain unanswered regarding emerging technologies for aftertreatment and integration of a total technically viable system. The administration's $3.680 million request for the 21CT portion of this budget line item is significantly lower than the historical level of the last few years. We suggest enhancing this by an additional $4 million (Total = $7.680 million) to handle the urgent technical issues of the relevant emerging technologies.

The Fuels Technologies is a separate OFCVT program element that includes Advanced Petroleum Based Fuels line item request of $3.511 million for the 21CT portion. It has been demonstrated by the National Labs that combustion efficiency of heavy-duty diesel engines can be improved via tailoring certain properties of fuels. In fiscal year 2007, new programs with industry-led teams will attempt to advance this research into the next stage of applied R&D. Therefore, we recommend enhancing the 21CT portion of this line item by an additional $1 million (Total = $4.511 million) to enable the investigation of this additional path for improved fuel efficiency.

We take this opportunity to affirm our strong endorsement to the proposed Department of Energy's fiscal year 2007 referenced budget requests with the stated specific enhancements. The trend-setting partnership between the U.S. Government and a key industrial base addresses this country's and world's needs in critical areas of transportation, energy security, economy and environment. The exemplary track record through competitive leveraging of government funding by substantial industry cost share and the emerging high potential results of these partnerships warrant strong congressional endorsement. This affords a unique opportunity for a justifiable and a highly effective return on investment of the U.S. taxpayers' money.

PREPARED STATEMENT OF THE SOUTHERN COMPANY

Mr. Chairman and members of the committee, Southern Company operates the Power Systems Development Facility (PSDF) (http://psdf.southernco.com) in Wilsonville, AL for the U.S. Department of Energy's (DOE's) National Energy Technology Laboratory (NETL) and several industrial participants.[1] The PSDF was conceived as the premier advanced coal power generation research and development (R&D) facility in the world. It has fulfilled this expectation. I would like to thank the Senate for its past support of the PSDF and request the committee's continued support. This statement supports the administration's budget request for DOE coal R&D which includes $25 million for work at the PSDF. These funds are necessary to conduct the future test program agreed to with DOE (see details below) and to support FutureGen—the integrated hydrogen and electric power production and carbon sequestration research initiative proposed by President Bush. DOE has identified the PSDF as one of the primary test centers to support FutureGen through subscale component testing. DOE's FutureGen Program Plan submitted to Congress on March 4, 2004 described the transport gasifier (one of the technologies under development at the PSDF) as a promising candidate for inclusion in FutureGen because:

". . . its high throughput relative to size, simplicity, and reduced temperature of operation compared with current gasifiers, will yield benefits throughout the FutureGen plant . . . Planned improvements in the coal feed system, particulate

[1] Current PSDF participants include Southern Company, the Electric Power Research Institute (EPRI), KBR, Siemens Power Generation, Inc. (Siemens), Peabody Energy, the Burlington Northern Santa Fe Railway Company, and the Lignite Energy Council. The Lignite Energy Council includes major producers of lignite (who together produce approximately 30 million tons of lignite annually); the Nation's largest commercial coal gasification project; and investor-owned utilities and rural electric cooperatives from a multi-State area that generate electricity from lignite, serving 2 million people in the Upper Midwest region. The Council also has over 250 contractor/supplier members who provide products and services to the plants and mines. In addition to the Wilsonville plant site major work is planned for the PSDF, or components are being developed at the following locations: Grand Forks, ND (sub-scale gasifier testing), Houston, TX (gasifier development); Orlando, FL (gas turbine low-NO_X burner), Pittsburgh, PA (filter fabrication), Deland, FL (filter fabrication), and Holly Springs, MS (gasifier fabrication).

control device, and the char cooling and removal system will significantly increase overall reliability of the transport gasifier, which would further reduce costs. The target is to achieve 95 percent availability rather than the 75 percent-80 percent availability typical of today's gasifiers.

"Because of its simplicity in design and lower temperature of operation, the transport gasifier can potentially reduce the capital cost of an IGCC plant by up to 20 percent (or from $1,400 to $1,120/kW) over those employing today's technologies. In addition, the operations and maintenance costs are expected to be lower and availability higher because of the lower temperature of operation."

A key feature of the PSDF is its ability to test new systems at an integrated, semi-commercial scale. Integrated operation allows the effects of system interactions, typically missed in un-integrated pilot-scale testing, to be understood. The semi-commercial scale allows the maintenance, safety, and reliability issues of a technology to be investigated at a cost that is far lower than the cost of commercial-scale testing. Capable of operating at pilot to near-demonstration scales, the PSDF is large enough to produce industrial scale data, yet small enough to be cost-effective and adaptable to a variety of technology research needs.

As a follow-on to the ongoing development of the transport gasifier at the PSDF, Southern Company and the Orlando Utilities Commission (OUC) were recently selected by DOE as part of a competitive solicitation under the Clean Coal Power Initiative (CCPI) to build an advanced 285-megawatt transport gasifer-based coal gasification facility at OUC's Stanton Energy Center in central Florida. The facility will use state-of-the-art emission controls and will showcase the cleanest, most efficient coal-fired power plant technology in the world. The transport gasifier offers a simpler, more robust method for generating power from coal than other available alternatives. It is unique among coal gasification technologies in that it is cost-effective when handling low rank coals (sub-bituminous and lignite) and when using coals with high moisture or high ash content. These coals make up half the proven U.S. and worldwide coal reserves.

Southern Company also supports the goals of the Clean Coal Technology Roadmaps developed by DOE, EPRI, and the Coal Utilization Research Council (CURC). These Roadmaps identify the technical, economic, and environmental performance that advanced clean coal technologies can achieve over the next 20 years. Over this time period coal-fired power generation efficiency can be increased to over 50 percent (compared to the current fleet average of ~32 percent) while producing *de minimis* emissions and developing cost-effective technologies for carbon dioxide (CO_2) management. EPRI recently used the modern financial technique called "Real Options" to estimate the value of advanced coal R&D.[2] The major conclusion of this study is that the value to U.S. consumers of further coal R&D for the period 2007–2050 is at least $360 billion and could reach $1.38 trillion. But, for these benefits to be realized the critically important R&D program outlined in the Clean Coal Technology Roadmap must be conducted.

SUMMARY

The United States has always been a leader in energy research. Adequate funding for fossil energy research and development programs will provide this country with secure and reliable energy while reducing our dependence on foreign energy supplies. Current DOE fossil energy research and development programs for coal, if adequately funded, will assure that a wide range of electric generation and hydrogen production options are available for future needs. Congress faces difficult choices when examining near-term effects on the Federal budget of funding energy research. However, continued support for advanced coal-based energy research is essential to the long-term environmental and economic well-being of the United States. Prior DOE clean coal technology research has already provided the basis for $100 billion in consumer benefits at a cost of less than $4 billion. Funding the administration's budget request for DOE coal R&D and long-term support of the Clean Coal Technology Roadmap can lead to additional consumer benefits of between $360 billion and $1.38 trillion.

One of the key national assets for achieving these benefits is the PSDF. The fiscal year 2006 funding for the PSDF needs to be $25 million to support construction of new technologies that are critical to the goals of the Clean Coal Technology Roadmap and to the success of FutureGen. The major accomplishments at the PSDF to date and the future test program planned by DOE and the PSDF's industrial participants are summarized below.

[2] 2 EPRI Report No. 1006954, "Market-Based Valuation of Coal Generation and Coal R&D in the U.S. Electric Sector", May 2002.

PSDF ACCOMPLISHMENTS

The PSDF has developed testing and technology transfer relationships with over 50 vendors to ensure that test results and improvements developed at the PSDF are incorporated into future plants. Major subsystems tested and some highlights of the test program at the PSDF include:

Transport Reactor.—The transport reactor has been operated successfully on subbituminous, bituminous, and lignite coals as a pressurized combustor and as a gasifier in both oxygen- and air-blown modes and has exceeded its primary purpose of generating gases for downstream testing. It is projected to be the lowest capital cost coal-based power generation option, while providing the lowest cost of electricity and excellent environmental performance.

Advanced Particulate Control.—Two advanced particulate removal devices and 28 different filter elements types have been tested to clean the product gases, and material property testing is routinely conducted to assess their suitability under long-term operation. The material requirements have been shared with vendors to aid their filter development programs.

Filter Safe-Guard Device.—To enhance reliability and protect downstream components, "safe-guard" devices that reliably seal off failed filter elements have been successfully developed.

Coal Feed and Fine Ash Removal Subsystems.—The key to successful pressurized gasifier operation is reliable operation of the coal feed system and the filter vessel's fine ash removal system. Modifications developed at the PSDF and shared with the equipment supplier allow current coal feed equipment to perform in a commercially acceptable manner. An innovative, continuous process has also been designed and successfully tested that reduces capital and maintenance costs and improves the reliability of fine ash removal.

Syngas Cooler.—Syngas cooling is of considerable importance to the gasification industry. Devices to inhibit erosion, made from several different materials, were tested at the inlet of the gas cooler and one ceramic material has been shown to perform well in this application.

Syngas Cleanup.—A syngas cleanup train was constructed and has proven capable of meeting stringent syngas decontamination requirements. This module that provides an ultra clean slip stream is now available for testing a wide variety of technologies.

Sensors and Automation.—Several instrumentation vendors have worked with the PSDF to develop and test their instruments under realistic conditions. Automatic temperature control of the Transport Reactor has been successfully implemented.

Fuel Cell.—Two test campaigns were successfully completed on 0.5 kW solid oxide fuel cells manufactured by Delphi on syngas from the transport gasifier marking the first time that a solid oxide fuel cell has been operated on coal-derived syngas.

Combustion Turbine Burner.—Integrating the existing 3.8 MW combustion turbine with a new syngas burner developed by Siemens has allowed system automation and controls development.

Syngas Recycle.—Added a syngas compressor in order to use syngas instead of air or N_2 for aeration to promote recycle solids flow in the Transport Gasifier and produced a higher heating value syngas that more closely matched commercial operating conditions.

PSDF FUTURE TEST PROGRAM

Future testing at the PSDF is focused on supporting FutureGen and the Technology Roadmaps. These programs aim to eliminate environmental issues that present barriers to the continued use of coal including major reductions in emissions of SO_2, CO_2, NO_X, particulates, and trace elements (including mercury), as well as reductions in solid waste and water consumption. The focus at the PSDF will remain on supporting commercialization of new coal-based advanced energy technologies including those initially developed elsewhere.

Plans for FutureGen recognize that some promising technologies will not be ready initially for installation in the back-bone plant. Therefore, a series of slip-stream installations to test new technologies is also visualized. DOE has identified the PSDF as a key location for support testing of the new technologies prior to inclusion in FutureGen. With adequate funding, work at the PSDF will include:

Transport Gasifier.—Continue transport gasifier development to further optimize performance, explore feedstock flexibility, and provide syngas for testing of downstream systems.

Coarse Ash Handling.—Continue testing of a coarse ash depressurization system, with no moving parts, which has been developed at the PSDF. Like the fine ash

removal system successfully developed earlier, this system reduces capital and maintenance cost and improves reliability.

Advanced Syngas Cleanup.—Test new advanced syngas cleanup systems for reducing hydrogen sulfide, hydrochloric acid, ammonia, and mercury to near-zero levels.

H_2/CO_2 Separation Technologies.—Integrate and test advanced H_2/CO_2 separation technologies to assess their performance on coal-derived syngas.

Syngas Cooler.—Test alternative designs that are less complex, have lower capital cost, and offer better control of the syngas exit temperature.

New Particulate Control Device Internals.—Evaluate alternative filter system internal designs from several vendors.

Improved Fuel Feed Systems.—Evaluate alternatives to conventional lock hopper feed systems that have been identified.

High-Temperature Heat Exchangers.—Test high-temperature heat exchangers as they become available for use in both advanced combustion and gasification technologies.

Fuel Cell.—Install and test a 5 to 10 MW hybrid fuel cell/gas turbine module.

Sensors and Automation.—Evaluate automation enhancements that simulate commercial control strategies. Further development at gasification operating conditions is planned for measuring coal feed rate, temperature, gas analysis, dust at low levels, and hazardous air pollutants.

Water Gas Shift Enhancements.—A variety of water gas shift reactor configurations and sizes can be tested at the PSDF. Optimizing the operation of shift catalysts when exposed to syngas at the PSDF and evaluating their economics will provide valuable input for the FutureGen project.

PREPARED STATEMENT OF THE AMERICAN IRON & STEEL INSTITUTE

The basis for this testimony is to urge Congress to restore funding of the Industrial Technologies Program (ITP) line item for Steel within the Energy Efficiency and Renewable Energy section at the Department of Energy [DOE] to the original level of $10 million dollars.

The stated goal of the ITP is to reduce the energy intensity of the U.S. industrial sector through coordinated research and development, validation, and dissemination of energy-efficiency technologies and operating practices. The Department of Energy and domestic steelmakers co-fund cutting-edge research that addresses the needs of the Nation and our industry. The goal of these projects is to reduce energy consumption [thereby diminishing the Nation's dependence on foreign sources of oil], lessen environmental impact and increase the competitiveness of domestic manufacturers. Furthermore, what makes the ITP program so unique and appropriate is that only those projects with "dual benefits" [i.e., a public benefit such as reduced emissions or petroleum use, which justifies the DOE investment; and an industry benefit such as a more efficient steelmaking process, which justifies the industry investment] are initiated. It is important to note that Federal funding does not go to steel companies, it is pooled with steel industry funds and awarded to qualified universities, national labs, and private research organizations through a competitive process.

Government involvement and increased funding is crucial to the continuation of this beneficial research. While it is plausible that U.S. steelmakers could conduct similar collaborative research among themselves without DOE funding, the ITP program accelerates technology development by allowing the industry to make great strides in these areas, rather than just steps. Greater energy reduction developments are produced sooner, more environmentally-friendly methods realized today, and domestic steel companies remain at the cutting edge of the global technology race [which assures competitiveness]. Likewise, the steel industry co-funding accelerates achievement of the DOE goals.

In 2003, Congress appropriated $10 million to fund the Steel component of ITP. Unfortunately, in recent years the program [and the projects it supported] suffered deep budget cuts. This is the case once again, as for fiscal year 2007, the administration requested approximately $3.5 million.

The decision to under-fund this program is peculiar, considering President Bush—in his State of the Union address—declared that, "Keeping America competitive requires affordable energy. America is addicted to oil, which is often imported from unstable parts of the world. The best way to break this addiction is through technology." The President went on to say that, "By applying the talent and technology of America, this country can dramatically improve our environment, move beyond a petroleum-based economy, and make our dependence on Middle Eastern oil a thing of the past." ITP, with its federally-mandated objectives of reducing depend-

ence on foreign oil, lessening environmental impact, and increasing job growth and retention, seems to be the type of program that the President and his administration is seeking. Therefore, as the ITP produces such an outstanding return on the government's and industry's investment, it seems appropriate to restore the program to optimal funding.

An example of one of the major breakthroughs developed through ITP-Steel [which demonstrates the program's ability to satisfy both its public and private objectives] is the advancement of advanced high strength steels or AHSS. Ten ITP projects investing $6.3 million of Federal and steel industry funding have been focused on AHSS, which permit the design of automobiles that are lightweight [thus greatly reducing fuel consumption and consequently emissions] but also retain all the safety and affordability of basic carbon steel. AHSS are rapidly being adopted by automakers. The following benefits are calculated using a market penetration of only 7 percent of AHSS-type vehicles, a low hurdle given the rapid adoption already evidenced in the new Ford 500 and Chrysler Pacifica:

Item	Savings Per Year	Savings Per Year/Per Federal $ Spent	$ Savings Per Year at $60/Barrel (In millions of dollars)
Barrels of oil	4,071,429	0.84 barrel	$244.4
CO_2 emissions reduction (tons)	2,100,000	0.50	([1])

[1] N.A.

The benefits of ITP-Steel—in terms of savings [large quantities of oil per Federal dollar spent along with large amounts of CO_2 and other emissions for that same Federal dollar]—are evidence that funding cuts to the program were ill-advised and should be reversed.

SUMMARY

The Industrial Technology Program selects projects that have both public and private benefits, justifying the investment of both DOE and industry, and it conducts research at the most qualified facilities in North America with over 80 percent of funding supporting tasks at universities, national labs and technology developers, many of which are small businesses. The ITP Program is a unique and successful program that is not only beneficial to the domestic steel industry; it is beneficial to the Nation as we attempt to curtail our dependence on foreign sources of energy. Please consider restoring ITP-Steel funding to the original level so that its public and private benefits can reach even further into our economy.

PREPARED STATEMENT OF THE US FUEL CELL COUNCIL

Chairman Domenici, Ranking Member Reid and honorable members of the committee, on behalf of the 120 organizations of the US Fuel Cell Council (USFCC), I want to thank this subcommittee and its predecessors for supporting fuel cell funding over the years. We respectfully ask the subcommittee to continue its leadership in this area by funding the fuel cell and hydrogen programs at the U.S. Department of Energy at $555 million—the level established in the Energy Policy Act of 2005—for research and development, technology validation, and market transition programs at DoE, through the Offices of Energy Efficiency and Renewable Energy (EERE), Fossil Energy (FE), Nuclear Energy (NE), and the Science (SC).

This figure represents a $204 million increase over the administration request. The urgency of our energy challenge, the promise of fuel cells, and the gains achieved to date by our public-private partnership all justify funding these programs at the level authorized by Congress in 2005. The increase we propose represents less than 2 days' worth of imported oil, which costs the Nation more than $1 billion every week.

Fuel cells are perhaps the ultimate energy generation device. Fuel cells rely on chemistry and not combustion; no fuel is burned. As a result, fuel cells are efficient, exceptionally clean, quiet, scalable and adaptable to virtually every energy need. The fuel for fuel cells can come from an amazing range of sources. Thus, fuel cells offer energy diversity in the short term and ultimately, true energy independence. Congress's support for fuel cell and hydrogen research has brought significant gains in fuel cell cost, performance, and durability. Fuel cells are a family of technologies; members of the family have reached the point of commercialization in some high value markets. By one count, more than 14,000 fuel cells are in operation world-

wide. The pace of development suggests that with additional funding, fuel cells can deliver on their extraordinary promise across a wide spectrum of applications.

Congress acknowledged this in 2005 with passage of the Energy Policy Act. The legislation prescribed additional investment, and a long-term strategy, that include continued research, learning demonstrations and technology validation, and market transition to support early purchases.

Congress approved just such a comprehensive program in EPACT05, because it recognized that accelerating the commercialization of this technology carries extraordinary benefits:

—Reducing our reliance on Middle East oil while moving towards energy independence;

—Improving air quality and combating greenhouse gas emissions; and

—Providing a reliable, efficient, high-quality source of power that decreases dependence on a vulnerable energy infrastructure.

In the first year of EPACT, Congress authorized $555 million. President Bush's request for fuel cell and hydrogen programs falls far short by about $204 million.

The President's budget request for low temperature fuel cell and hydrogen programs is in line with his original 5-year, $1.2 billion commitment, while the request for high temperature fuel cell programs (SECA) is in line with the fiscal year 2006 appropriation. These levels do not fully reflect the will of the Congress in research and development. Worse, from the perspective of an emerging industry, the President and his Department of Energy have chosen not to propose full funding of the programs Congress authorized last year in technology validation and proposed no funding at all for system purchases. We request that Congress correct this error and appropriate funds to the level authorized in the Energy Policy Act of 2005.

Over the past 3 years, shortfalls in fuel cell and hydrogen core program funds have slowed and in some cases stopped high-priority research and development. Full funding can restore program momentum, and give the country some hope that we can break the cycle of energy dependence. Competition for energy supply and security of supply are both urgent concerns, and the Nation's investment, we believe, ought to match that urgency.

By and large, the programs that have been most deeply affected by funding reallocations are non-automotive fuel cell programs. We believe this approach is shortsighted. The path to commercialization is a continuum across all applications. Many fuel cell systems share similar components; as fuel cells move to the marketplace in stationary, portable and micro-applications, they will stimulate cost reduction, energize the supply chain, facilitate infrastructure development and make consumers aware of the technology, its operation and its benefits. All these accomplishments will help us achieve our automotive goals on an accelerated timetable.

Arguably the best way to bring down fuel cell costs is to allow State and Federal agencies to join the ranks of other satisfied early adopters. The Market Transition program is limited in size and scope; but it is a critical path to commercialization. What's more, the Market Transition provision by no means forces Federal and State agencies to make fuel cell purchases; instead, it simply provides a financial mechanism for acquisition where fuel cells fill an agency's need. The legislation establishes the market transition program with a first year authorization of $20 million.

Finally, we recognize that this subcommittee has a Constitutional obligation to review and modify the budget as you understand the Nation's energy development priorities. The fuel cell and hydrogen programs are programs of national purpose. They benefit from a centrally coordinated effort, openly conducted and competitively bid. Indeed, this committee has instructed that it be so. This approach assures accountability and reduces duplication and waste. Congressionally-directed programs have become an important part of the overall investment in fuel cells and hydrogen. Ideally, these congressionally-directed projects would be additive to the core DoE program, or in a fiscally constrained environment, closely track program priorities and development timetables.

There is growing support for ethanol and other biofuels, and for hybrid vehicles as responses to our energy challenge. These programs would not, by themselves, solve our problem. They would, however buy us time to make the transition to hydrogen. The best news is that they are also fully consistent with a hydrogen future and would facilitate the transition. But it would be short-sighted to reduce our investment in the long-term solution. The public/private partnership in fuel cells is working; full funding will continue this progress, and bring closer the transition to a secure, environmentally clean, low-carbon energy future.

Thank you for considering our requests.

PREPARED STATEMENT OF THE GEOTHERMAL ENERGY ASSOCIATION

On behalf of the members of the Geothermal Energy Association, we urge the subcommittee on Energy and Water Appropriations to support restoration of funding in fiscal year 2007 for the U.S. Department of Energy's (DOE) Geothermal Energy Research Program. Continued geothermal research by the Department of Energy is urgently needed and clearly justified.

The National Research Council's review of the DOE renewable energy programs found that the geothermal research program was undervalued (Renewable Power Pathways, 2000). According to that report, the resource has significant potential to contribute to our Nation's energy needs. It states, "Many analysts believe that a substantial fraction of U.S. baseload power could potentially be supplied by a variety of geothermal resources."

The Geothermal Task Force Report prepared for the Western Governors' Association's Clean and Diversified Energy Advisory Committee (CEAC) has recently made similar recommendations. The Task Force's January, 2006 Report recommends that "geothermal research by the U.S. Department of Energy should be increased, particularly into technologies that can reduce risk, reduce costs, or expand the accessible resource base."

Today, some 25 States use geothermal resources for power or direct use purposes, but they are tapping only a small fraction of the potential. For example, there is 2,800 MW of geothermal power in use in the United States today, but the U.S. Geological Survey (USGS), in its Circular 790, estimated a hydrothermal resource base of between 95,000 and 150,000 MW! Further, this estimate does not include the full range of geothermal resources, nor does it assess what could be possible with advances in engineered geothermal systems or other technological breakthroughs.

GEA projects that with continued Federal and State support geothermal power could expand beyond providing 5 percent of California's electric power to providing 6 percent of the entire Nation's electric power by 2025. (See Chart 1). We estimate that over 30,000 MW of geothermal power could be developed in the next 20 years, representing an investment in new domestic energy supplies of over $70 billion. This level of production and new investment in geothermal energy would mean 130,000 new full-time jobs and 500,000 person-years of construction and manufacturing employment. Yet, at this level of geothermal production, we would only be utilizing a small fraction of the ultimate geothermal potential.

CHART 1.—PROJECTED GEOTHERMAL POWER PRODUCTION BY 2025

Resource	Power Capacity (MW)	Percent of Resource Potential
Hydrothermal	16,825	~10–15
Oil Well co-prod	6,000	<5
Geopressured	1,000	<1
Distributed Gen	500	<1
EGS	4,000	<1
Power Subtotal	28,325	<1
Direct Use	[1] 2,400	<5
Total Geothermal	30,725	<1

[1] Equivalent.

The benefits of achieving this would be substantial. This power capacity would produce 240,976 GWhrs of electricity annually [1] and add important reliability to the system. This generation is roughly equal to 100 percent of the electricity generated in California, Nevada and Idaho combined in 2004.

Achieving this potential would provide millions of consumers reliable, cost-effective power at stable prices. Also, this amount of electricity could displace as much as one-third of the natural gas currently used in power production, benefiting consumers by relieving pressure on spiraling natural gas prices.

However, while State renewable laws and Federal tax incentives will propel the expanded use of geothermal energy, this level of production in 2025 will not be achieved without DOE program support. We estimate that of the projected 30,000 MW one-half is highly dependent upon continued research and technological devel-

[1] Power production assumes 95 percent availability, direct use equivalent at 50 percent.

opment supported through DOE's program. The loss of DOE's program would be a major setback to both the pace and extent to which we can expand our use of this important renewable energy resource.

The Federal Government has made a significant investment in developing a laboratory and university research community that is leading the world in developing the technologies needed to utilize this vast resource. This is not the time to abandon this effort. The budget's short-sighted proposal to close out the geothermal research program would significantly set-back progress towards national energy goals and jeopardize new technology development for decades.

Therefore, we urge the Energy and Water Appropriations Subcommittee to continue supporting DOE's Geothermal Research Program in fiscal year 2007 and, specifically, to appropriate $32.5 million for the programs defined in more detail in this statement.

BACKGROUND ON GEOTHERMAL ENERGY

While only a small fraction of the geothermal resource base is utilized today, it already provides significant energy for our Nation. The United States, as the world's largest producer of geothermal electricity, generates an average of 16 billion kilowatt hours of energy per year—more than wind and solar combined. Geothermal power provides more than half of all renewable electricity used in California, about 9 percent of northern Nevada's electricity, and about 25 percent of the island of Hawaii's electricity. Farms, spas, businesses and schools in over 24 States utilize geothermal resources as an energy source.

The energy, environmental, and economic benefits of geothermal are substantial. Geothermal electricity produces 11,500 full-time jobs annually, not including the hundreds of jobs created by direct use applications. The United States' current geothermal generation is equivalent to burning close to 25 million barrels of oil or 6 million short tons of coal per year. Geothermal electricity displaces the emissions of 16 million tons of carbon dioxide, 78 thousand tons of sulfur dioxide, 32 thousand tons of nitrogen oxides, and 17 thousand tons of particulate matter every year, compared with production of the same amount of electricity from a state-of-the-art coal-fired plants.

With continued Federal and State support, much more geothermal generation is possible. The U.S. Geological Survey (USGS), in its Circular 790, reported that the geothermal resource base was vast, involving hundreds of thousands of megawatts. But, much of this resource is hidden, and we do not have commercially available exploration technologies that can effectively identify geothermal reservoirs without drilling. But, drilling is expansive and risky, and often involves permitting and other obstacles.

Continued improvements and the development of new technologies to identify, develop and produce energy from geothermal resources is critical if most of the very large resource base is ever to become economically feasible to use. This includes developing the techniques necessary for engineering geothermal systems that could some day allow so-called hot dry rock power production. Beyond hydrothermal resources, there is significant new geothermal production potential from co-production in oil and gas fields, geopressured gas resources in Texas and Louisiana, and distributed power generation. Notably, both oil field and geopressured production have significant potential to expand U.S. oil and natural gas production. All of these efforts need support through DOE's program and are at a critical point in their development.

Beyond electric power generation, expanding the direct use of geothermal resources by businesses, farms, and communities needs to be addressed more vigorously in DOE's programmatic efforts. Expanded direct use geothermal has widespread application across the Nation, and would largely displace fuels used for heating and industrial and commercial processes. By displacing fossil fuels, developing the technologies and techniques to expand direct use would have a direct, positive impact on national security.

Utility scale power production under the 2025 projection above would expand geothermal generation beyond four States today (California, Nevada, Utah and Hawaii) to also include Alaska, Wyoming, Idaho, Oregon, Washington, Alaska, Arizona, Colorado, New Mexico, Texas and Louisiana. In addition, distributed generation and expanded direct use of geothermal resources could provide new energy in a larger number of States including: Alabama, Arizona, Arkansas, California, Colorado, Hawaii, Idaho, Illinois, Kansas, Louisiana, Mississippi, Montana, Nebraska, Nevada, North Dakota, New Mexico, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, West Virginia, and Wyoming.

FISCAL YEAR 2007 RECOMMENDATION

We agree with the January 2006 WGA Geothermal Task Force Report. It recommends: "a strong, continuing geothermal research effort at the Department of Energy that addresses the full range of technical problems encountered in achieving full production from the identified and undiscovered resources in the West." The report also supports ". . . continuation of advanced technology programs and outreach through GeoPowering the West." In addition, the report urges DOE to expand its program in critical areas "particularly the identification and development of new resources" and "support for exploration and exploratory drilling." Finally, it asks DOE to "examine whether existing Federal loan guarantee authority in law can be used to supplement these activities to reduce risk and encourage development of new resource areas." (http://www.westgov.org/wga/initiatives/cdeac/geothermal.htm.)

Consistent with the Energy Policy Act of 2005's recommendation that "The Secretary shall conduct a program of research, development, demonstration, and commercial application for geothermal energy . . . " for fiscal year 2007 we recommend that Congress appropriate $32.5 million for DOE's geothermal program. Of this amount:

—$8.5 million should support work by the Intermountain West Geothermal Consortium (IWGC), which was authorized by the Energy Policy Act of 2005 to support national energy security through research into and development of underutilized geothermal resources in cooperation with industry. Partner institutions include Boise State University, University of Idaho, Idaho National Laboratories, GeoHeat Center at Oregon Institute of Technology, Desert Research Institute with the Nevada System of Higher Education, and the Energy and Geosciences Institute at the University of Utah.

—$2 million should support the continuing work of the University of Nevada's Great Basin Center for Geothermal Energy, which is critical to developing the very substantial and untapped resources of the Great Basin. UNR has been doing pioneering work in expanding our knowledge of the Great Basin resource while advancing both science and near-term development possibilities through its work and collaboration with industry.

—$4 million should support the work of Sandia National Laboratories (SNL) to develop advanced technologies for drilling and related research that will reduce the cost and risk of exploration and new projects. Drilling cheaper, smarter, and with less impact is a critical component of identifying and making expanded use of the geothermal resource economically feasible.

—$4 million should support cost-shared, exploratory drilling consistent with OMB's cost-sharing guidelines. This program should be coordinated with the USGS to support their efforts to produce a new national geothermal resource assessment. These funds could alternatively be used to support a targeted loan guarantee program as recommended to DOE by Sentech in its March 2005 report.

—$4 million should support local information, outreach, and project development efforts through the State working groups of DOE's GeoPowering the West (GPW) initiative. GPW has active State working groups in Alaska, Arizona, California, Hawaii, Idaho, Oregon, Nevada, New Mexico, Texas, Utah, and Washington, and is working in Colorado, Montana, South Dakota and Wyoming. This award-winning program is recognized as essential to expanding geothermal usage.

—$10 million should be designated for other activities administered by the Department of Energy, including peer-reviewed, partnered, and cost-shared industry-applied research; and, longer-range research including DOE's Enhanced Geothermal Systems (EGS) research effort designed to develop advanced technology capable of tapping the virtually limitless heat content of the Earth.

FUTURE BENEFITS

For the Nation, the return on the investment in new geothermal technology would be substantial. As the WGA Geothermal Task Force recently reported, "With sustained support from the Department of Energy, Geothermal power can be a major contributor to the power infrastructure and economic well-being of the Western States."

The U.S. Department of Energy's Geothermal R&D program benefits the entire U.S. economy. Research shows that for every million dollars invested in geothermal energy, $2.5 million will return to the United States economy. The program's success can turn the thousands of megawatts of untapped geothermal potential into a clean, reliable, sustainable, indigenous, distributed electricity source; produce thou-

sands of new direct-use applications serving communities, farms and businesses; and spur other beneficial uses of the natural heat of the earth.

Finally, achieving the level of production possible by 2025 would have substantial environmental benefits. Compared to state-of-the-art coal plants, this would annually offset 266 million tons of carbon dioxide emissions. This is equal to the annual CO_2 emissions from 41 million automobiles—30 percent of all automobiles in use in 2003 according to the Department of Transportation. Or, in an international perspective, emissions avoided by geothermal generation in 2025 would represent more than the combined total CO_2 emissions from Austria, Hungary, Iceland, Ireland, Lithuania, New Zealand, Sweden, and Switzerland in 2002.

OMB'S JUSTIFICATION

With a highly selective reading of the Energy Policy Act of 2005 (EPAct), the Office of Management and Budget appears to justify its proposal to terminate the DOE Geothermal Research program on the fact that Congress included important provisions in this legislation to stimulate new geothermal development. EPAct included important tax incentives for new geothermal plants, an extensive revision of the Geothermal Steam Act, and directives for an expanded DOE renewable research program that specifically includes geothermal energy. OMB ignores the devastating impact that terminating the geothermal program would have on the potential contribution of this industry to national energy needs and its international competitiveness. Further, their justifications do not appear to be based upon metrics that are applied consistently across technologies, nor do they appear to be based upon documented and objective analysis. Quite simply, it's difficult to argue with their analysis, when there doesn't appear to be any. Both the process and results of their decision making are a mystery.

Thank you for considering the views of the Geothermal Energy Association. Please feel free to contact us if you have any questions or need additional information about recommendations made in this statement.

PREPARED STATEMENT OF THE AMERICAN FOREST & PAPER ASSOCIATION

The Agenda 2020 Technology Alliance, a Special Project of the American Forest & Paper Association (AF&PA) welcomes this opportunity to thank the committee for its fiscal year 2006 support in providing sustained funding to our industry's key public-private partnerships within the Office of Energy Efficiency and Renewable Energy (EERE) and to urge increased funding to adequately address industry's challenges in fiscal year 2007. The Industrial Technologies Program (ITP) and the Office of Biomass Programs (OBP) provide vital funding for research, development, and demonstration (RD&D) of technologies that dramatically reduce the forest products industry's energy intensity and transforms our industry into producers of carbon-neutral biofuels—thus addressing strategic national needs associated with energy efficiency, energy security, diversified energy supply, and environmental performance. We strongly recommend funding of $6 million for forest products industry in ITP. We support the President's request for $150 million for Biomass and Biorefinery Systems R&D in OBP and ask that the committee work to ensure eligibility of forest biorefineries in these programs and keep the appropriations unencumbered to allow for full funding of competitive biorefinery RD&D grants. Furthermore, we recommend that the committee restore OBP funding of $10 million for competitive R&D for black liquor gasification, a key enabling technology of the forest biorefinery.

The Agenda 2020 Technology Alliance is an industry-led partnership with government and academia that holds the promise of reinventing the forest products industry through innovation in processes, materials and markets. The collaborative, precompetitive research, development, and deployment supported through Agenda 2020 provide the foundation for new technology-driven business models that will enable our industry to meet competitive challenges, while also contributing solutions to strategic national needs. The technology solutions developed through Agenda 2020 are aligned to provide solutions to the competitive challenges faced by the U.S. forest products industry, which accounts for approximately 7 percent of total U.S. manufacturing output, employs 1.3 million people, and ranks among the top 10 manufacturing employers in 42 States with an estimated payroll of $60 billion.

As is the case with many U.S. manufacturing industries, we face serious domestic and international challenges. Since 1997, 101 pulp and paper mills have closed in the United States, resulting in a loss of 70,000 jobs, or 32 percent of our workforce. An additional 67,000 jobs have been lost in the wood products industry since 1997. New capacity growth is now taking place in other countries, where forestry, labor,

and environmental practices may not be as responsible as those in the United States. In addition, globalization, aging process infrastructure, few technology breakthroughs, as well as recent financial performance and environmental concerns, hinder the ability of U.S. companies to make new investments. The volatility of energy markets, especially for natural gas, has made our competitive position even more precarious and heightened the need to develop new energy efficient technology. Each year without new investments, new technologies and new revenue streams, we lose ground to our overseas competitors.

Currently, energy is the third-largest manufacturing cost for the forest and paper industry at 18 percent for pulp and paper mills—up from 12 percent just 3 years ago. For some of our mills, the cost of energy is about to eclipse employee compensation.

Since 1994, the forest products industry has been one of DOE's "Industries of the Future," partnering with ITP through the Agenda 2020 Technology Alliance in RD&D that has yielded successful advances towards out national energy and environmental goals. Agenda 2020 stands as an example of successful industry-government collaboration to develop technologies that hold the promise of reinventing industry, while providing real solutions for strategic national energy needs. Every Federal $1 spent on ITP saves $7.06 in annual energy costs and 1.3 million in annual source BTUs (2004 estimates). As recently as 2003, the ITP/Agenda 2020 portfolio included a total shared DOE and industry investment of almost $48 million, with nearly 55 percent coming from direct project cost shares by industry.

Today, after 5 years of continuous and substantial cuts, the ITP/Agenda 2020 budget has been reduced by over 65 percent since fiscal year 2002. This undermines our progress in achieving crucial energy efficiencies at a time when energy is a major factor in the survival of the U.S. forest products industry. Projects re-scoped or cut in fiscal year 2005 due to budget shortfalls resulted in a lost energy savings potential of 5 trillion BTUs/yr. With substantially less funding in fiscal year 2006, we will be unable to pursue projects in key priority areas such as advanced water removal and high efficiency pulping, which represents a lost savings potential of 100–200 trillion BTUs/yr. A further reduction is proposed in fiscal year 2007 ($2.878 million), barely sufficient for only one collaborative project and 1 or 2 concept studies. By comparison, in the early 2000's, the portfolio included nearly 40 collaborative research projects across the country with varying sizes and scopes, but with a common goal of developing breakthrough technologies and processes that produce dramatic improvements in energy efficiency in an environmentally-sound manner.

This comes at a crucial time when the forest products industry, like many energy-intensive industries, is facing unprecedented pressures due to the rising costs of energy and seeking solution as diverse as fuel switching, finding new energy sources, and developing options for reducing energy consumption. Although we are nearly 60 percent self-sufficient (using biomass), the volatility of natural gas prices has translated into an additional cost to the industry of more than $2 billion annually—and places us at a significant disadvantage compared with our international competitors. Thus we are in greater need than ever for the technology-based energy efficiency solutions that could be provided through our Agenda 2020 partnership with ITP. The AF&PA's recommended ITP funding for forest products research ($6 million) would help our industry partially recover its capacity to develop and deploy vital energy efficiency technologies. Restoring Agenda 2020 funding to pre-fiscal year 2005 levels will not only help the competitive position of American industry, but will also serve national strategic goals for reduced dependence on foreign oil.

The Integrated Forest Products Biorefinery (IFPB) is a key Agenda 2020 technology platform and a top technical and economic priority for our industry. The objective is to develop and deploy core technologies that can be integrated into existing processing infrastructure, which would be transformed into geographically distributed production centers of renewable "green" bioenergy and bioproducts. This can be done while co-producing existing product lines, creating higher skilled and better paying jobs, strengthening rural communities, and opening new domestic and international markets for U.S. forest products companies.

The IFBP technology has the potential to integrate agricultural wastes, agricultural producers, forest landowners, agricultural landowners, forest product producers, and the petrochemical industry to produce clean renewable bio-fuels to support our local economies and the Nation. Widespread application of this technology would not only reduce environmental impact of burning fossil fuels, it would also increase the viability of agricultural, forest products, and other industries that use waste heat. It will create new high paying jobs, both direct and indirect, increasing tax revenue. From an energy perspective, the IFPB has the benefit of making the forest products industry even more energy self-sufficient, serving the DOE strategic goal of reduced energy intensity in industry by reducing fossil energy consumption.

In addition, the IFPB would permit the industry to become a producer of renewable, carbon-positive bioenergy and biofuels, contributing to DOE strategic goals to dramatically reduce dependence on foreign oil and to create new domestic bioindustry.

AF&PA supports the President's announced $150 million budget initiative in fiscal year 2007 for biorefinery research and demonstration. This initiative provides much needed funding to advance core enabling IFPB technologies, as well as providing major capital cost-share for commercial scale biorefinery demonstration. The forest products industry is an ideal partner to develop and commercialize integrated biorefineries. We have much of the infrastructure and expertise—wood harvesting, transportation and storage, manufacturing and conversion infrastructure, waste handling and recovery—needed to achieve the goals of integrated biorefineries. By and large, they are located in rural communities where they can help realize important synergies between agricultural and forest-based feedstocks.

Our industry currently is poised to field several projects to advance key IFPB technologies for biofuel production, and even demonstrate biorefineries at the commercial scale. In order to achieve the promise of IFPB technologies for the industry and for the Nation, we need greater stability and availability of funds provided through the OBP budget. The trend of increasing OBP earmarks, over 50 percent of the fiscal year 2006 appropriation, has contributed to a marked reduction in real availability of funds for biorefinery RD&D. We urge the committee to preserve and leave unencumbered the proposed $150 million funding of Biomass and Biorefinery Systems R&D, so that there will be sufficient appropriations to fund FOA No. DE–PS36–06GO96016, the recently released solicitation for biorefinery demonstration and commercialization. We also urge the committee to ensure that forest-based materials are eligible for this and future biorefinery research and demonstration funding. Forest-based materials can sustainably produce enough biofuels to displace up to 10 percent of the country's petroleum production. They are a vital feedstock for achieving reduced dependence on foreign oil and facilitating bioindustries domestically and should be included in programs for biomass and biorefinery RD&D.

A core enabling technology for part of the IFPB is black liquor gasification (BLG), which converts the by-product of the chemical pulping process into a synthetic gas. The synthetic gas can subsequently be burned to directly produce clean, efficient energy, or converted to other fuels such as hydrogen, renewable transportation fuels, and/or other high value chemicals. If fully developed and commercialized, BLG has the potential to produce a net 22 gigawatts of power, displacing as much as 100 million barrels of oil per year. This translates into displacement of 900 BCF of natural gas consumption for power generation by the year 2020, assuming that BLG is placed in service by 2010.

In fiscal year 2006, DOE eliminated funding for BLG and related research, despite recent technical progress to bring the technology to pre-commercial demonstration. BLG is a core enabling technology for the IFPB, and is identified as a priority technology area for biorefineries in technology roadmaps created by industry, as well as in research plans developed by OBP to accelerate biorefineries and development of national bioindustry. Critical research areas identified by OBP include: integrated biorefinery support for thermochemical biorefineries, products core R&D in chemicals and fuels from syngas; thermochemical platform core R&D in BLG and syngas cleanup. AF&PA is recommending that $10 million be restored in the OBP budget for competitive research in these critical areas and to complete BLG core research and projects that were eliminated in recent cuts. This funding will provide the groundwork needed for next vital steps leading to large-scale demonstration of biofuels and biochemicals production in association with the industry's dominant Kraft pulping process.

We appreciate the committee's interest in ensuring sustained and adequate funding for RD&D partnerships and look forward to working with you to advance industry and national interests.

PREPARED STATEMENT OF GEO-ENERGY PARTNERS

EXECUTIVE SUMMARY

Eliminating the DOE geothermal budget will have a serious, negative effect on developing America's premier renewable energy resource. The DOE/GRED cost-sharing program, in particular, has provided a great incentive for small independents to undertake exploration activities that otherwise would be beyond their financial reach. If development of geothermal resources is to be significantly expanded in the future, exploration for yet unproven resources will be required. The DOE/GRED cost-sharing program is essential if these exploration activities are to continue.

BACKGROUND

During the 1960's and continuing into the early 1980's the U.S. geothermal industry flourished, with major petroleum and mining firms in addition to numerous independent geothermal companies scouring the western United States for geothermal resources. During that period, nearly all of the currently existing geothermal electrical production was constructed.

Since then, geothermal exploration has essentially been non-existent and the geothermal industry is currently dominated by four large corporations (Calpine, Ormat, Caithness and CalEnergy). Except for CalEnergy's discovery and development of the Coso, California geothermal resource in the 1980's, these companies have only purchased already-explored/discovered operating facilities, focused on increasing the efficiency of their own operating plants or expanded already-proven fields. These four companies no longer conduct grass roots exploration. However, without exploration, always largely by independents (and solely by independents now), not a single one of the currently producing geothermal fields in the western United States would have come into existence. Exploration and discovery of new geothermal resources is solely in the hands of small independent geothermal enterprises. Fortunately the "independents" are primarily comprised of experienced geothermal professionals who have been in the industry since the boom days of the 1960's, 1970's and 1980's.

The U.S. geothermal industry is in desperate need of a new wave of exploration and discovery to respond to the current burgeoning demand and growing need for secure, domestic renewable energy resources. It is a sad fact that not since 1992 has a new geothermal field been brought on-line for power production in the United States: Brady's Hot Springs in Nevada. Since then all additions to U.S. geothermal capacity has been accomplished through incremental expansions in already-developed fields. The last new field brought on line in California was Honey Lake in 1989; in Utah the last was the Cove Fort geothermal plant in 1985; and in Hawaii it was Puna in 1984.

Geothermal energy is the only true base-load renewable energy source and has a decades-long track record of being on-line over 95 percent of the time using proven, dependable technology. Wind and solar are wonderful technologies, however, they only produce power when the wind blows or the sun shines. Electrical generation from a geothermal plant is 24/7/365.

The DOE Geothermal Resource Exploration and Definition program ("GRED") has provided funding to encourage exactly the type of exploration necessary to promote the discovery of new geothermal resources for the next wave of geothermal development. GRED I in 2000, GRED II in 2002 and the ongoing GRED III programs have encouraged exploration in previously unexplored areas and has already resulted in the identification of over 80 MW of new geothermal resources. More GRED III drilling will take place this summer at our Emigrant leasehold. The Emigrant Slimhole Drilling Project is an 80 percent DOE/20 percent Esmeralda Energy Company ("EEC") cost-shared exploration slimhole. EEC is negotiating for a power purchase agreement ("PPA") for Emigrant and recently signed such a PPA with San Diego Gas & Electric for our Truckhaven lease applications in Imperial County, California.

The experienced independents are the only ones in the geothermal industry willing and capable of making the next wave of geothermal development a reality. However, initial exploration efforts are costly and have a high degree of risk. DOE geothermal funding has historically been minimal but it remains a critical element in developing untapped geothermal resources. Eliminating the DOE geothermal budget, in particular the DOE GRED program, will have a serious, negative effect on developing America's premier renewable energy resource.

PREPARED STATEMENT OF THE AMERICAN GAS ASSOCIATION

Mr. Chairman and members of the subcommittee, the American Gas Association (AGA) represents 197 natural gas distribution utilities that serve more than 56 million homes and businesses in all 50 States. We appreciate the opportunity to assist you with consideration of the U.S. Department of Energy's (DOE) fiscal year 2007 budget request.

Natural gas meets one-fourth of U.S. energy needs. Almost all of this natural gas is produced in the United States or Canada, making natural gas a vital, clean, and domestic form of energy. Local natural gas utilities deliver natural gas through more than 1 million miles of underground pipelines. The terrorist acts of September 11, 2001 and the war with Iraq have made clear the need for continued investment in U.S. energy infrastructure, both to facilitate greater reliance on domestic energy resources and to ensure reliable delivery. Energy is the lifeblood of the U.S. economy, and innovative technologies such as distributed energy will help ensure a reli-

able and efficient supply of electricity—even if a central power station or the electric grid were to be compromised.

AGA continues to support DOE research programs such as natural gas vehicles and industrial research and development (R&D). AGA wishes, however, to outline three top priorities of particular benefit to natural gas consumers and the utilities that serve them:

—The Office of Fossil Energy's Natural Gas Infrastructure Technology research program for which AGA urges Congress to appropriate $15 million.

—The Office of Fossil Energy's Gas Storage Technology Consortium (GSTC) for which AGA urges Congress to appropriate $2.0 million.

—The Office of Fossil Energy's Natural Gas Exploration, Production and Hydrates research programs.

OFFICE OF FOSSIL ENERGY: NATURAL GAS INFRASTRUCTURE

At present the natural gas industry operates more than 1 million miles of underground pipe of varying sizes. The industry and DOE estimate that $19 billion of investment will be needed over time to replace this infrastructure in the ordinary course. Additionally, due to projected new natural gas demand (increasing by 40 percent by 2025), another $42 billion will be needed in the coming years for expansion of the natural gas delivery system.

AGA strongly supports DOE's natural gas industry Infrastructure and Operations program, which was established in fiscal year 2001 with an initial appropriation of $4.9 million. The goal of the program goal is to make mid- to long-term investments in improving the reliability and efficiency of the Nation's natural gas infrastructure. Projects funded by DOE include development of more corrosion-resistant material that can transport gas at higher pressure, fuel-efficient compressors capable of flexible operation, technologies to detect and assess corrosion and mechanical damage, improved automated data acquisition, system monitoring and control techniques, no-dig technologies, innovative excavation and restoration systems, and plastic pipe technology. This research has played a critical role in assuring that the Nation's energy supply reaches consumers.

Natural gas industry response to this program has been enthusiastic, as evidenced by the submission of more than 100 cost-sharing proposals by industry partners in the first year alone. These early proposals, totaling more than $75 million, exceeded the available dollars by a 9-to-1 factor.

In fiscal year 2005, Congress appropriated $8.47 million for this program but eliminated this funding in fiscal year 2006. DOE's natural gas infrastructure and operations program is the only Federal program focused on mid- to long-term natural gas pipeline research. Without this vital research, many technologies needed to increase the deliverability and reliability of the existing pipeline network will not come to fruition.

Given the importance of expanding the Nation's natural gas infrastructure in anticipation of significantly growing demand for natural gas, the American Gas Association requests that Congress appropriate $15 million for the DOE's Fossil Energy natural gas infrastructure research program in fiscal year 2006.

The natural gas industry provides substantial cost sharing in developing the technologies necessary for this new infrastructure. Major and novel system improvements are needed for natural gas to be delivered in the volumes that DOE believes will be required in the future. These improvements depend on new, highly efficient technologies.

DOE'S GAS STORAGE TECHNOLOGY CONSORTIUM (GSTC)

The mission of the DOE Gas Storage Technology Consortium is to assist in the development, demonstration and commercialization of technologies to improve the integrity, flexibility, deliverability, and cost-effectiveness of the Nation's underground natural gas/hydrocarbon storage facilities. The Consortium is on target to deliver technology advancements to industry and has co-funded 18 projects totaling $2.567 million Federal dollars. Projects can be categorized under two major headings: (1) Integrity—which function to improve safety and reliability of the underground storage operations; (2) Deliverability Enhancement—which focus on identifying ways to increase existing storage capacity and deliverability.

The American Gas Association actively supports the DOE Gas Storage Technology Consortium and requests Congress to provide $2.0 million for natural gas storage in fiscal year 2007.

THE OFFICE OF FOSSIL ENERGY'S NATURAL GAS EXPLORATION, PRODUCTION AND HYDRATES RESEARCH

Research investment is a key tool for producing more gas from marginal wells that would otherwise be shut-in prematurely now and for producing more gas in the future from very long-term, high-risk, but potentially promising frontier areas such as methane hydrates.

The DOE Exploration and Production research program is aimed directly at small producers working on high-risk deep drilling operations and stripper wells and marginal wells in Appalachia. Technological advances in these areas are conveyed to small gas producers through the Multi-Lab/Industry Partnership and the technology transfer program.

AGA supports continued funding for the DOE Exploration and Production research program.

CONCLUSION

Mr. Chairman, AGA is giving great emphasis to developing comprehensive programs that enhance economic and national security, provide cheaper energy to the end-user, reduce emissions, and improve energy efficiency. AGA greatly appreciates your past support and consideration of these proposals.

PREPARED STATEMENT OF AUSTIN ENERGY

This testimony supports funding for development and deployment of plug-in hybrid vehicles (PHEVs) within the Department of Energy's fiscal year 2007 budget request. Specifically, Austin Energy supports: (1) $10 million for Section 706 of the Energy Policy Act of 2005 ("EPACT")—Joint Flexible Fuel/Hybrid Commercialization Initiative; (2) $15 million for Sections 711/911 of EPACT—Hybrid Vehicles for system and component development for plug-in hybrid vehicles; and (3) $2.5 million for Title 8 of EPACT—Advanced Vehicles for a fuel cell vehicle developed with a plug-in hybrid drive platform. Funding of $27.5 million within these three areas should be included within the Hybrid and Electric Propulsion section of the Vehicle Technologies Program of the Energy Efficiency and Renewable Energy budget.

Austin Energy, the Nation's 10th largest community-owned electric utility, serves 360,000 customers within the City of Austin, Travis and Williamson Counties, Texas. Austin provides electricity to the capital city of Texas through a diverse generation mix of nuclear, coal, natural gas and renewable resources. Austin Energy has been nationally recognized for its Green Choice renewable electricity program. Austin sells more renewable electricity, primarily wind, than any other utility in the country.

Austin Energy has also been a national leader in energy efficiency. Austin's Green Building program for both commercial and residential buildings has been a national model for use of sustainable building technologies.

As the President remarked in his State of the Union Address, and repeated again this week, the United States needs to break its addiction to imported supplies of petroleum. The principle use of imported petroleum is to produce gasoline to power the transportation sector, particularly automobiles. With $3.00 gasoline the American public is ready to embrace new technology. Congress and the DOE can move forward to help right now. Already popular hybrid vehicles demonstrate that there is now a technologically feasible way to power automobiles with both an internal combustion and an electric engine. The plug-in hybrid vehicle is a modification of current hybrids. Plug-in hybrids can be charged from the existing electrical grid by plugging the car into an ordinary wall socket while the internal combustion engine can be a flexible fuel engine that will run on domestically produced biofuels.

PHEVs will run on a dedicated electric charge for a number of miles (20–60 depending on the size of the battery pack) then shift to liquid fuel.

PHEVs have the ability to significantly increase mileage over both conventional cars and existing hybrids. Instead of the constant switching between gasoline and electric power as is done in a hybrid today, the PHEV runs on electric power until the batteries are drained, only then does the fuel engine engage to power the car. If the driver's daily commute is within the electric range (20–60 miles), or if driving is within a small geographical area (city delivery trucks), then gasoline consumption is minimized thus starting us down the road to reduced imports.

Austin Energy is convinced that PHEVs will be a significant contributor to reducing our Nation's reliance on imported oil. Unlike other transportation alternatives, PHEVs require neither new fueling infrastructure nor driver behavioral changes. The infrastructure for PHEVs, standard electric sockets, already exists and Ameri-

cans have already become accustomed to plugging-in Blackberries, cell-phones and lap-top computers. In the instance that one forgets or is unable to plug-in the car, it will run as usual on gasoline or flexible fuel.

The funding initiatives recommended by the President in the DOE fiscal year 2007 budget submission will speed the day when PHEVs are widely available to American citizens. Other DOE programs support plug-in hybrid technology developed as part of flexible fueling operations for cars as well as integrated within the advanced fuel cell vehicle. PHEV technology will complement any existing automobile fueling system or one envisioned for the future. The DOE budget submission will provide for deployment of PHEVs in demonstration activities to allow for different commercial applications of the vehicles. PHEV technology is adaptable to all vehicle platforms—from large trucks to commuter cars.

Austin Energy supports Congressional appropriations to increase the availability of PHEVs and demonstrate its capacity as a solution to our "oil addiction." Austin Energy is also willing to support the Federal effort by overseeing a national grassroots campaign to demonstrate the consumer market for PHEVs.

Austin Energy's "Plug-In Partners" is an initiative to demonstrate to the automobile manufacturers that a consumer market already exists for PHEVs. Utility rebates and incentives, State, county and municipal government endorsements, and citizen petitions are evidence of an expanding interest in PHEVs. A key aspect of the Plug-In Partners campaign is the "soft" fleet orders. Fleet owners, both private and governmental, sign a pledge to strongly consider purchasing a certain number of PHEVs when available from an original equipment manufacturer. While the fleet owner understands that the cars are not presently on line, the belief in the concept of a PHEV is sufficient for them to make the soft fleet order. This helps demonstrate a market to automakers. A number of such orders have been obtained.

Austin Energy's Plug-In Partners campaign was announced nationally on January 24, 2006 at the National Press Club in Washington, DC. Senator Orrin Hatch of Utah spoke of the importance of PHEVs to ending our reliance on foreign oil. On behalf of Governor Pataki of New York, Charles Fox, Deputy Secretary for Energy & Environment offered support for the campaign. The Plug-In Partners campaign has been joined by the cities of Austin, Baltimore, Boston, Dallas, Denver, Kansas City, Los Angeles, Oakland, Philadelphia, Phoenix, Salt Lake, San Francisco and Seattle. The New York State Energy & Research Development Authority (NYSERDA), American Corn Growers Association, Soybean Producers of America, Alliance To Save Energy, American Council on Renewable Energy, Energy Future Coalition, Environmental and Energy Study Institute, Center for American Progress and Set America Free are among the many public interest groups that are members of the coalition. Finally, Plug-In Partners have been endorsed by the American Public Power Association and many of its members around the country as well as the Edison Electric Institute.

Austin Energy has also committed $1 million for rebates to Austin Energy customers who purchase plug-in hybrids when they become available.

The Congress, by funding DOE initiatives to develop and deploy PHEVs, will help ensure the success of the Austin Energy Plug-In Partner campaign and will be a significant step in lessening American dependence on imported oil.

PREPARED STATEMENT OF THE COAL UTILIZATION RESEARCH COUNCIL

CURC submits this testimony in support of increasing the DOE's fossil energy budget by the following: coal R&D $31.8 million; CCPI $145.0 million; FutureGen $54.0 million, in new appropriations.

Technology has facilitated a successful environmental transformation of the coal-based power industry, and all of this has been accomplished while maintaining the benefits of reliability and affordability. Improvements in technology have allowed dramatic reductions in emissions while providing consumers with some of the lowest cost electricity in the world. Many of these technology solutions emerged through an unprecedented collaboration between the public and private sectors, commonly cited as the "Clean Coal Technology Program." For the past 20 years, this program has included two fundamental components:

—A basic research and development activity that was primarily government funded, and that took new ideas in the use of coal to a "proof of concept" level, and

—A program which has been approximately two-thirds private sector funded, that took these concepts and demonstrated their viability in first-of-a-kind commercial scale facilities, through a program currently labeled the "Clean Coal Power Initiative" and formerly referred to as the Clean Coal Technology demonstration program.

These two programs have created new generations of technologies that are cheaper and more effective in addressing the environmental concerns that pose barriers to continued or expanded use of coal in the United States. The benefits of these programs have been large. For example, just one technology—low NO_X burners—went from a concept in the 1980's to commercial demonstration in the 1990's and is now installed on almost all coal-fired power plants in the United States. The National Academy of Sciences concluded that nitrogen oxide and sulfur dioxide control technology programs had achieved significant success: "The resulting environmental savings translated to more than $60 billion in damage and mitigation costs that were avoided".[1] The General Accounting Office concluded that: "This [Clean Coal Technology] program serves as an example to other cost-share programs in demonstrating how the government and private sector can work effectively together to develop and demonstrate new technologies."[2]

The technology development program at the Office of Fossil Energy has received broad recognition for its contributions to the Nation, including numerous "Power Plant of the Year" awards from Power magazine, "Top 100" awards from R&D magazine, and citations from the National Society of Professional Engineers. Power magazine called the development of fluidized bed coal combustors "the commercial success story of the last decade in the power generation business."

The benefits that will flow to the Nation from the use of coal for power production have been projected at over $400 billion in gross output in 2010.[3] Other benefits are less easily quantified but are no less real, and include energy security, national security, and a degree of freedom for the U.S. Government to make geopolitical policy decisions not based, in part, upon the political preferences of oil exporting nations. Two hundred years' supply of currently recoverable coal (at current rates of consumption) gives the United States a high degree of security if we choose to fully exploit this advantage.

The potential for coal to help in meeting the Nation's future energy needs is almost unlimited. Coal can continue to provide clean, low-cost electricity. Coal can also provide a feedstock for production of chemicals and transportation fuels, and helps provide a low cost bridge to a hydrogen-based future economy. However, coal faces new environmental challenges: mercury control and carbon control. The formula that worked for previous environmental challenges—developing cost-effective technologies to address emissions control—will work in overcoming these new challenges as well. But it will be difficult for coal's benefits to reach their potential without a continuing partnership between the government and the private sector.

As discussed below, CURC believes that the administration's fiscal year 2007 budget request for research, development and demonstration of needed coal technologies is insufficient to allow the Nation to reap the benefits that can flow from expanded use of coal to meet our energy needs.

THE CLEAN COAL TECHNOLOGY ROADMAP

The CURC and the Electric Power Research Institute (EPRI) in consultation with the DOE, have developed a clean coal technology roadmap (see CURC website at www.coal.org). The roadmap identifies a variety of research, development and demonstration priorities that, if pursued, could lead to the successful development of a set of coal-based technologies that will be cost-effective, highly efficient and achieve greater control of air and water emissions compared to currently available technology. The roadmap outlines the technology steps necessary in order to achieve these goals. In addition, recognizing the ongoing concerns regarding global climate change, the roadmap includes a technology development program for carbon management, defined as the capture and sequestration (long-term storage) of carbon dioxide. In the event public policy requires CO_2 management at some future time, pursuit of the RD&D program outlined in the Roadmap will best ensure that cost-effective technologies will be under development or already developed. CURC is not alone in the belief that these carbon management technologies merit continued Federal support. In a report concluded in 2005, the National Research Council of the National Academies concluded that prospective benefits of the DOE carbon sequestration research program would likely total $35 billion, if the Nation decided that carbon mitigation measures were necessary.[4]

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[1] News Release by the National Academies, accompanying publication of NAS report reviewing the DOE research program, July 17, 2001.

[2] Statement of Jim Wells, Director, Natural Resources and Environment, GAO, before the Subcommittee on Energy, Committee on Science, House of Representatives, June 12, 2001.

[3] "The Economic Impact of Coal Utilization in the Continental United States", A. Rose, PhD, Pennsylvania State University, 2002.

[4] "Prospective Evaluation of Applied Research and Development at DOE", NRC, p. 43, 2005.

Importantly, CURC and EPRI use a "portfolio" approach and advocate several technology development "pathways" that should be pursued concurrently to achieve the roadmap goals. As an example, the Nation should pursue both gasification and combustion-based technology paths.

CONCLUSIONS AND RECOMMENDATIONS

Using the roadmap as a tool to guide our Nation's coal research and development (R&D) efforts, CURC has examined the fiscal year 2007 budget request for coal and submits the following recommendations.

—The funding proposed for the Clean Coal Power Initiative (CCPI), $5 million in fiscal year 2007, is wholly inadequate to meet the needs that this program was created to address. The most critical challenges facing coal use today are near- and longer-term environmental constraints, particularly mercury control and the possible requirements to capture and store CO_2. The CCPI is needed to ensure the demonstration of advanced mercury control technologies, the demonstration of advanced power cycles that provide significantly greater efficiency in the conversion of coal to useful energy or products (thereby preventing CO_2 emissions) and the demonstration of first generation CO_2 capture and storage technologies, both for conventional coal systems and advanced combustion and gasification based systems. Oxycombustion, advanced scrubbers and chemical looping are examples of some of the important combustion-related carbon management systems under development.

With respect to mercury control technologies, thanks to an extremely successful program to develop and field test a number of improved mercury control technologies, we are now in a position to conduct commercial-scale, multi-year demonstrations of those technologies. Time for this activity is critical, as technologies will be needed to comply with the second phase of EPA's mercury emission limits in 2018, and will probably be needed on some new coal-based power plants prior to that date.

It should be noted that the administration's budget documents justified cuts in the CCPI program by alleging mismanagement by the Department. Frankly, we do not understand this opposition by OMB, particularly when the accomplishments of the demonstration program have been so substantial, and when global accolades for DOE's program successes have been so prevalent. Funds appropriated for the CCPI program have been committed, perhaps not all under contract or spent, but committed to clean coal projects. Complex projects with estimated costs exceeding tens of millions of dollars will require significant periods of time to negotiate; none of this should be surprising. Indeed, one of the largest CCPI awarded projects, the Southern Company Transport Gasifier (IGCC) project with a total estimated cost of more than $550 million and a DOE cost share of $235 million was negotiated in 16 months and the project is underway.

CURC recommends that the funding for CCPI in fiscal year 2007 be increased to $150 million. Combined with other resources available to the program, this could be sufficient to allow a solicitation for technology proposals in late 2006 or early 2007.

—The roadmap recognizes the benefits to technology development that the FutureGen project can provide and the CURC supports this important R&D program that can serve as a test bed for demonstrating technologies developed out of the DOE's R&D projects. To succeed as originally envisioned, basic R&D activities must continue to provide the technology components needed in FutureGen, like lower cost oxygen production systems, cheaper synthesis gas cleanup, and hydrogen-capable combustion turbines. This world class project will require a long term and substantial financial commitment from the Federal Government. The administration seeks to use "old" and previously appropriated funds to support FutureGen in fiscal year 2007. These previously appropriated funds ($54.0 million) along with $203 million in other appropriations also previously appropriated should be set aside for use in later years when the critical and expensive construction stage of the project is undertaken. The $54.0 million requested in fiscal year 2007 should be provided as new appropriations.

—Recognizing that the current fiscal situation is extremely difficult and that many worthy government programs have been reduced, some dramatically, the basic R&D funding levels identified within the CURC/EPRI Roadmap can generally be met within the totals that the Congress enacted and the President signed into law as part of the fiscal year 2006 appropriations bill for energy and water. The Congressional amounts (minus appropriations for "program direction") enacted in fiscal year 2006 for the DOE's coal R&D program was $297.1

million. CURC is recommending a total increase of $31.8 million to the amounts requested in the fiscal year 2007 budget. Adoption of these recommended increases would result in a total fiscal year 2007 budget of $302.8 million which is slightly above amounts enacted in fiscal year 2006. In those coal R&D programs not recommended for additional funding in fiscal year 2007, CURC emphasizes that funding is adequate and that no funds should be taken from these programs. The specific recommendations are:

—*Advanced Turbines*.—This program, funded at $12.8 million in the DOE's fiscal year 2007 request, should be funded at $25.0 million. The additional resources are needed to ensure that the development of the hydrogen turbine remains on schedule as well as development of other advanced turbines. In both instances, such turbines are essential if carbon constraints are imposed. It should also be noted that hydrogen turbines are an important component of FutureGen.

—*Innovations for Existing Plants*.—Much progress has been made in developing and deploying technologies to reduce emissions from existing coal-fired power plants. However, we need to focus additional attention on mercury emissions control, fresh water consumption, solid waste generation, and overall efficiency improvements at these plants. Efficiency improvements achieved through application of advanced technologies will reduce carbon dioxide emissions as well as other emissions. An additional $6.4 million is recommended for the Innovations for Existing Plants budget line. The additional funds would allow continued and accelerated progress particularly on mercury control technologies.

—*Advanced Research*.—This program should receive an additional $8.4 million to support the on-going ultra-supercritical materials consortium as well as DOE support to university coal research programs.

—*Coal-derived Fuels and Liquids*.—CURC supports the DOE hydrogen program as coal will be a major fuel source if we transform, in part, to a hydrogen-based economy. However, we believe that the fossil energy fuels and liquids program should also focus on methods to reduce the cost of facilities to manufacture coal to fuels or liquids. A total of $5.0 million in additional funding for this area is recommended. These additional funds should be made available for development of advanced catalysts and processes, reactor design, fuel property modification as well as system and design studies focused upon coal-to-liquids plant economics, operability and size of facilities to achieve widespread application of coal-to-liquids conversion technology in all regions of the United States. In addition, we are very concerned that on-going hydrogen studies at DOE are not being fully coordinated with the fossil energy office. Congress should insist that fossil energy be fully consulted and that any outside peer review of hydrogen R&D programs include reviewers designated by the fossil energy office.

In summary, CURC believes that coal can play a vital role in helping America meet its needs for reliable and affordable energy, but only if a continuing commitment to technology development allows coal to overcome remaining environmental challenges. The fiscal year 2007 budget request does not reflect such a commitment. Congress must restore funding to the CCPI technology demonstration program and also ensure that the FutureGen program is adequately and fully funded. In addition, modest adjustments to the basic R&D program are appropriate. A table summarizing these recommendations by CURC is attached to this statement.

PREPARED STATEMENT OF THE NUCLEAR ENERGY INSTITUTE

On behalf of the nuclear energy industry, thank you for your oversight of the Federal Government's used nuclear fuel management program and funding for the Department of Energy's (DOE) nuclear technology-related programs. My statement for the record addresses three key points:

—*Congress should fully fund the Yucca Mountain program to provide secure, environmentally responsible management of used nuclear fuel*.—NEI recommends that the program be funded at the President's request of $544.5 million to enable DOE to submit a license application for Yucca Mountain to the Nuclear Regulatory Commission (NRC) next year.

—*The industry urges continued support for DOE's nuclear energy programs at $560 million*.—NEI supports higher funding for DOE's Office of Nuclear Energy, Science and Technology to support the new Global Nuclear Energy Partnership and sustain existing programs. To achieve its objectives, DOE must have additional funding for Nuclear Power 2010, Generation IV reactor pro-

grams and the Nuclear Hydrogen Initiative. We strongly recommend full restoration of the University Infrastructure and Assistance Program along with continued funding for the Nuclear Energy Research Initiative and initiating the Nuclear Energy Systems Support Program.

—*The NRC's budget request of $777 million should be reviewed for efficiencies*.—NEI urges Congress to thoroughly examine the NRC's budget increased budget request to ensure proper resource allocation and to recognize reduced demands due to delays in Yucca Mountain licensing.

The Nuclear Energy Institute is responsible for developing policy for the U.S. nuclear energy industry. NEI's 250 corporate and other members represent a broad spectrum of interests, including every U.S. utility that operates a nuclear power plant. NEI's membership also includes nuclear fuel cycle companies, suppliers, engineering and consulting firms, national research laboratories, manufacturers of radiopharmaceuticals, universities, labor unions and law firms.

The nuclear industry generates electricity for one of every five U.S. homes and businesses, and is taking steps to develop affordable, reliable and clean electricity for the future. Nuclear energy is a vital component of a diverse energy portfolio that enhances America's energy security and fuels economic growth. We applaud the efforts and actions of this committee in recognizing nuclear energy as an important part of a diverse, competitive and secure energy policy for generations to come.

INDUSTRY SUPPORTS BUDGET REQUEST OF $544.5 MILLION FOR YUCCA MOUNTAIN

The nuclear industry appreciates the strong support and leadership that the Congress has provided on the Yucca Mountain repository program. The Federal Government is already 8 years behind on its commitment to start moving used nuclear fuel from temporary storage at nuclear power plants across the Nation to a Federal repository. Under the most optimistic scenario, it will be several more years before the repository is licensed and operating. Since 1983, consumers of electricity from nuclear power plants have committed nearly $23 billion in fees and interest to cover the costs of this program, and the Nuclear Waste Fund balance is more than $20 billion.

The Federal Government taking title to and moving used fuel away from reactor sites, along with quantifiable progress on Yucca Mountain, are top priorities for the nuclear industry. Continued progress toward a used fuel management solution is important for building new nuclear plants that will maintain nuclear energy as a key component of our Nation's energy production mix throughout the 21st century.

DOE recently completed a thorough review of the Yucca Mountain program and has outlined needed improvements in the program. The agency's recent re-organization and lead laboratory designation are steps in that direction. We are encouraged that the department's leadership now has the necessary focus to move the program forward. The program shift toward a new fuel handling approach has promise to better facilitate licensing and operation of the facility.

The Secretary of Energy recently testified before Congress that the agency this summer will provide a schedule for submitting a license application for Yucca Mountain to the Nuclear Regulatory Commission, and for repository construction and operation. The industry strongly believes that it is critical that DOE meet this commitment. In particular, it is imperative that a high-quality license application be submitted as soon as practicable to demonstrate measurable progress on this critical program. There will be ample opportunity going forward for additional detail to be provided by DOE.

In order for this progress to be accomplished, we fully support the administration's $544.5 million request for the Office of Civilian Radioactive Waste Management. This funding level is necessary for DOE to complete a high quality license application and prepare to defend it in the NRC licensing process, to improve existing Yucca Mountain site infrastructure and develop new infrastructure, and for repository facilities design. We also welcome Secretary Bodman's statement that he reserves the right to adjust the funding request in light of the program schedule plan that will be completed over the next few months.

The industry also supports legislative action by Congress to address regulatory, long-term funding and other issues to allow the department to move forward with this project. We look forward to working with the committee now that the administration has forwarded its legislative recommendations to Congress.

The nuclear industry has consistently supported, including in testimony before this committee, research and development of advanced fuel cycle technologies incorporated in the Advanced Fuel Cycle Initiative (AFCI). In anticipation of a major expansion of nuclear power in the United States and globally, it is appropriate to ac-

celerate activities in this program. The renaissance in development of nuclear energy requires advanced fuel cycles in the future.

President Bush has presented a compelling vision for a global nuclear renaissance through the Global Nuclear Energy Partnership (GNEP). This initiative provides an important framework to address challenges for nuclear power development related to fuel supply, long-term radioactive waste management and proliferation concerns.

We recognize that the Congress has important questions regarding this program. The industry believes that the near term focus for GNEP is for DOE to determine, by 2008, how to proceed with demonstration of advanced recycling technologies and other technological challenges. Consequently, the industry fully supports increased funding for the Advanced Fuel Cycle Initiative in fiscal year 2007. However, neither AFCI, nor GNEP reduces the immediate near-term imperative for progress on Yucca Mountain.

RESEARCH AND DEVELOPMENT NECESSARY FOR NEW NUCLEAR ENERGY

The Nation needs new electricity capacity. The Energy Information Agency forecasts that demand for electricity will grow by more than 40 percent over the next 25 years. Simple maintaining nuclear energy as 20 percent of U.S. electricity supply (its current share) will require construction of 50,000 megawatts (40–50 large plants) of new nuclear plants by 2030. DOE and the industry are working on cost-shared programs that will ready new nuclear energy technology for the marketplace midway through the next decade. Within the Nuclear Power 2010 program, funding should be allocated for demonstrating NRC licensing processes for new nuclear plants, including those for early site permits and the combined construction and operating license. The industry remains fully committed to this initiative and strongly recommends increasing funding to $110 million[1] to meet the schedule for completion.

The industry believes that the government has a limited, early role in bringing advanced reactor concepts—Generation IV reactors—to the marketplace. NEI urges the committee's support for the development of a next-generation nuclear plant at the Idaho National Laboratory, funded through the Generation IV Nuclear Energy Systems Initiative program at $100 million. The industry also supports the Nuclear Hydrogen Initiative at $30 million.

Although DOE continues to fund the International Nuclear Energy Research Initiative (I–NERI), the domestic version of this program (NERI) has been superseded by a new initiative that continues the basic science of NERI under other DOE nuclear energy programs. The industry believes a collaborative basic science program between national laboratories, industry and universities like NERI should be continued in fiscal year 2007.

Congress authorized the Nuclear Energy Systems Support program as part of the Energy Policy Act of 2005, but DOE proposed no funding for the program in fiscal year 2007. The industry supports this new program and suggests $15 million to fund an analysis of high performance fuel at the Idaho National Laboratory. Future budgets for this program could focus on developing technology to predict and measure the effect of aging on plant systems and components; and introducing new metals and other materials to assure the safety of key systems and components.

The industry also strongly recommends restoration of DOE's University Infrastructure and Assistance Program, which provides for vital research and educational programs in nuclear science at the Nation's colleges and universities. The global nuclear renaissance will demand highly educated and trained professionals in the engineering sciences. NEI also encourages the committee to consider supporting a new program within the Office of Science that encourages support for undergraduate and graduate programs in health physics, radiochemistry and other disciplines important to medical, energy and other applications of commercial nuclear technology.

NRC BUDGET AND STAFFING SHOULD BE REVIEWED

The NRC's proposed fiscal year 2007 budget totals $777 million, an increase of $35 million from the fiscal year 2006 budget, and the highest ever for this agency. Six years ago, the NRC's budget was $488 million. This is an appropriate time for Congress to review the budget request and resource allocations in light of current demands and the other resources available.

The NRC's fiscal year 2006 budget request of $702 million was increased by $41 million by Congress for two purposes. The commission was allocated an additional

[1] The $110 million is necessary to sustain progress with the NP 2010 program, and is exclusive of any projected carry-over of the DOE fiscal year 2006 budget that may or may not be available for fiscal year 2007.

$20 million to fund an investment "over 2 years" to support the preparatory activities and pre-application consultations for the expected combined construction and operating license applications beginning in fiscal year 2008. The NRC also was provided $21 million to be used to conduct "site specific assessments of spent fuel pools at each of the nuclear reactor sites." Although Congress clearly established a limited period for funding in these two categories, the NRC has incorporated these amounts into its budget baseline.

As a result of the significant increases in the NRC's budget, licensee fees have increased dramatically. Generic licensee fees for each reactor will increase from $3.1 million to more than $3.6 million. When other NRC fee increases specific to each reactor are included for licensees, NRC fees for power reactors will increase by over 20 percent in 1 year.

The NRC's fiscal year 2007 budget request includes $35.3 million for generic homeland security costs. Section 637 of the Energy Policy Act of 2005 modified the NRC's user fee to exclude the costs of generic homeland security from fees recovered from licensees, except reimbursable costs of fingerprinting and background checks and the costs of conducting security inspections. The NRC's budget proposal includes more than $70 million for homeland security functions. Section 637 requires that only a portion of the NRC's budget for this function be supported by general funds. The industry agrees that certain NRC security functions are for the common defense of the Nation and should be funded from general funds.

America's nuclear power plants were the most secure U.S. industrial facilities before the Sept. 11, 2001, terrorist attacks, and are even more secure today. Over the past 5 years, the nuclear industry has made significant improvements in security at nuclear power plants. The NRC substantially upgraded its security requirements in 2002 and again in 2004. The industry has invested more than $1.2 billion in security-related improvements and has increased its security guard forces from around 5,000 to more than 7,000. Security at commercial nuclear facilities is unmatched by any other private sector or area of the critical infrastructure, and the nuclear industry has been a leader in working with the Department of Homeland Security and other Federal and State resources on security issues.

INDUSTRY SUPPORT FOR ADDITIONAL ACTIVITIES

Nuclear Nonproliferation.—The industry urges the committee to support the President's request for the MOX project, which is a vital element of U.S. nonproliferation activities. This year is particularly crucial to the project because construction is scheduled to begin.

Low-Dose Radiation Health Effects Research.—The industry supports continued funding for the DOE's low-dose radiation research program.

Nuclear Research Facilities.—The industry is concerned about the declining number of nuclear research facilities, and urges the committee to fully fund DOE's lead laboratory in Idaho for nuclear energy research and development.

Uranium Facility Decontamination and Decommissioning.—The industry fully supports cleanup of the gaseous diffusion plants at Paducah, KY; Portsmouth, OH; and Oak Ridge, TN. Commercial nuclear power plants contribute more than $150 million each year to the Decontamination and Decommissioning Fund for government-managed uranium enrichment plants. Other important environmental, safety and/or health activities at these facilities should be funded from general revenues.

International Nuclear Safety Program and Nuclear Energy Agency.—NEI supports the funding requested for the DOE and NRC international nuclear safety programs. They are programs aimed at improving the safe commercial use of nuclear energy worldwide.

Medical Isotopes Infrastructure.—The nuclear industry supports the administration's program for the production of medical and research isotopes.

PREPARED STATEMENT OF THE EXTERNAL ADVISORY COMMITTEE TO THE DEPARTMENT OF PETROLEUM AND GEOSYSTEMS ENGINEERING, UNIVERSITY OF TEXAS AT AUSTIN

The External Advisory Committee to the University of Texas at Austin Department of Petroleum and Geosystems Engineering is gravely concerned that the administration's fiscal year 2007 budget request eliminates funding for the Department of Energy's oil and natural gas technologies budget. We respectfully urge you to restore funding to at least the fiscal year 2006 appropriated level of $64 million.

Many have tried to label this appropriation as corporate welfare for "big oil." Nothing could be further from the truth. DOE's oil and natural gas technologies budget ensures that all Americans benefit from the technological advances necessary to produce America's ever more marginal oil and natural gas reserves.

This Draconian cut has a severe negative effect on the University of Texas' ability to produce quality petroleum engineers that this Nation so desperately needs. Department Chairman Bill Rossen informs me that more than half of the university's petroleum engineering research dollars would be eliminated if the program's budget were to be zeroed out. I can attest that the cut's effect on the Nation's other 15 petroleum engineering schools would be similar.

The External Advisory Committee that I chair is made up of oil and gas leaders throughout the country. We already provide significant support to the University of Texas at Austin and other similar research institutions. But more help is needed.

We are advised that the Department of Energy office of fossil energy already has in place safeguards to ensure that its research dollars are not giveaways or welfare checks to oil and gas companies, but rather support critical research and development efforts that are not otherwise taking place. We respectfully suggest that Congress could mandate the development of similar safeguards as a condition of this appropriation.

Public domain oil and natural gas technology research is a vital public policy interest of the United States that merits a Federal appropriation. Such research ensures the continued vitality of our academic institutions. It provides the technology development needed to supply America's energy into the future. It strengthens the American economy and our way of life, and it upholds America's energy security.

Thank you for your support of this critical appropriation request.

PREPARED STATEMENT OF THE NATIONAL MINING ASSOCIATION

NMA RECOMMENDATIONS

Department of Energy

Office of Fossil Energy.—$54 million in new funds for the FutureGen Initiative; $257 million in previously appropriated funds should be designated for the FutureGen Initiative; $303 million for base coal research and development programs; and, $150 million for the Clean Coal Power Initiative (CCPI).

U.S. Army Corps of Engineers

Civil Works Program.—See table below for NMA's list of priority projects and recommendations.

BACKGROUND

Office of Fossil Energy.—The NMA strongly supports the $54 million in new funds for the FutureGen Initiative; recommends the rescission and advance appropriation of the entire $257 million in prior year Clean Coal Technology Program funds for FutureGen's use in the out years; and recommends at least $303 million be appropriated for base coal research and development programs. In addition, the Clean Coal Power Initiative (CCPI) should be funded at a level of $150 million; the Advanced Turbine program should be funded at $25 million; and the Advanced Separation Technologies should receive $3 million.

The FutureGen Initiative will design and build, in the United States, a first-of-a-kind commercial-scale power plant that will provide the technological capability to: (1) capture and permanently store 90 percent or more of the plant's CO_2 emissions; (2) power about 150,000 American homes with the clean electricity it generates from coal; and, (3) co-produce hydrogen and potentially other useful by-products from coal.

Technological advancements achieved in the base coal research and demonstration programs such as gasification, advanced turbines, and carbon sequestration, provide the component technologies that will ultimately be integrated into the FutureGen project. NMA believes these programs should be funded at a level of at least $303 million. Within this amount, the advanced turbine program should be funded at $25 million instead of the requested level of $13 million. The increase in funding will ensure the FutureGen project meets intended goals.

In addition, NMA recommends a $3 million level of funding for the Center for Advanced Separation Technology (CAST), which is led by a consortium of seven universities with mining research programs. The advanced separations program conducts high-risk fundamental research which will lead to revolutionary advances in separation processes for the coal industry and develop technologies which crosscut the full spectrum of mining and minerals industries.

Civil Works Program.—NMA reviewed the proposed fiscal year 2007 request for the USACE's Civil Works Program and supports the request for additional expenditures from the Inland Waterway Users Fund and the strategy to accelerate high-priority projects that provide benefits to the Nation. However, NMA is very concerned that the proposed fiscal year 2007 budget does not provide sufficient funding to keep critical navigation projects on schedule, allow for the start of new projects, and address the maintenance backlog for existing navigation projects. Therefore, NMA provides the following recommendations:

—A minimum of $5.5 billion should be appropriated in fiscal year 2007 for the Civil Works Program. This level balances the need to address the significant project backlog and the capability of the Corps with our Nation's needs for jobs, economic growth, homeland security and national defense.

—The effort to develop criteria for budgeting purposes is long overdue. However, NMA is very concerned that the use of performance-based budgeting, and specifically the performance budgeting tool Remaining Benefit/Remaining Cost (RB/RC) ratio, will have significant impacts on project appropriations. The navigation projects span many years and the benefits for many of the projects are not realized until completion. In addition, the lack of sufficient funding levels needed to keep projects on schedule compounds the impact. NMA does not support the administration's proposals for zero funding for the Kentucky River Lock and J.T. Myers Lock and Dam projects that are currently under construction. In the case of the Kentucky lock, more than 25 percent of the total project cost has been spent.

The fiscal year 2007 appropriations for the Corps' General Investigations account should be increased from $95 to $200 million. These studies are critical to ascertaining and developing future projects.

The fiscal year 2007 proposed funding in the amount of $2.258 billion for the Corps' Operations and Maintenance (O&M) functions should be increased. More than half of the locks are more than 50 years old and in need of significant maintenance. Delaying necessary maintenance impacts the ability to move commerce efficiently, exacerbates further deterioration and accelerates the need for major rehabilitation and possibly at higher costs than necessary. The current backlog of critical maintenance for navigation is estimated to be more than $600 million. The replacement value of the lock and dam facilities in the United States are estimated to be $125 billion. As a Nation, we cannot abandon our inland waterway system and we must increase the monies spent on O&M.

Below is a table indicating NMA's Fiscal Year 2007 Priority Projects.

NMA FISCAL YEAR 2007 PRIORITY PROJECTS

	Fiscal Year 2006 Enacted	Fiscal Year 2007 Requested	Fiscal Year 2007 Efficient Funding Level
Construction:			
Robert C. Byrd Locks and Dams Ohio River, OH/WV	$914,000	$1,800,000	$1,800,000
Kentucky River Lock Addition, Tennessee River, KY	23,000,000	.....	55,000,000
Marmet Locks and Dams, Kanawha River, WV	73,500,000	50,800,000	50,800,000
McAlpine Locks and Dams, Ohio River, IN/KY	70,000,000	70,000,000	70,000,000
Locks and Dams 2, 3, 4, Monongahela River, PA	50,800,000	62,772,000	62,800,000
J.T. Myers Locks and Dams, Ohio River, IN/KY	700,000	.....	9,000,000
Olmsted Locks and Dams, Ohio River, IL/KY	90,000,000	110,000,000	110,000,000
Winfield Locks and Dams, Kanawha River, WV	2,400,000	4,300,000	4,300,000
Emsworth Dam, Ohio River, PA	15,000,000	17,000,000	17,000,000
Investigations:			
Greenup Locks and Dam, KY and OH	225,000	.....	4,000,000
Emsworth, Dashields & Montgomery (Upper Ohio River)	1,275,000	.....	4,000,000

Regulatory Program.—NMA supports the administration's request of $173 million for administering the Corps' Clean Water Act (CWA), Section 404 permit program and for implementing the Memorandum of Understanding (MOU).

The Regulatory Branch plays a key role in the U.S. economy since the Corps currently authorizes approximately $200 billion of economic activity through its regulatory program annually. The ability to plan and finance mining operations depends on the ability to obtain Clean Water Act Section 404 permits issued by the USACE within a predictable timeframe. In addition, NMA recommends that a portion of such regulatory program funding be used for implementing the MOU issued on Feb-

ruary 10, 2005 by the U.S. Army Corps of Engineers, the U.S. Office of Surface Mining, the U.S. Environmental Protection Agency, and the U.S. Fish and Wildlife Service. This MOU encourages a coordinated review and processing of surface coal mining applications requiring CWA Section 404 permits.

The National Mining Association (NMA) represents producers of over 80 percent of the coal mined in the United States. Coal continues to be the most reliable and affordable domestic fuel used to generate over 50 percent of the Nation's electricity. NMA members also include producers of uranium—the basis for 20 percent of U.S. electricity supply. NMA represents producers of metals and minerals that are critical to a modern economy and our national security. Finally, NMA includes manufacturers of processing equipment, mining machinery and supplies, transporters, and engineering, consulting, and financial institutions serving the mining industry.

PREPARED STATEMENT OF THE NATIONAL COMMUNITY ACTION FOUNDATION

Mr. Chairman, and members of the subcommittee, the National Community Action Foundation represents the 760 local Community Action Agencies (CAAs) that deliver most of the Weatherization Assistance Program investments.

We are requesting that the subcommittee reject the President's request that slashes the program by 33 percent in fiscal year 2007 and shuts it down over the next 3 years. We urge you, at the very least, to maintain the program at its fiscal year 2006 level. (The program could quickly ramp up its work if the subcommittee decides to provide a substantial and sustained increase, but we certainly recognize the budgetary realities Congress faces for fiscal year 2007.)

We were astonished that the administration retreated from 5 years of advocating for increased Weatherization funding just when oil and natural gas prices reached record highs. The 2007 budget request reduces Weatherization and other programs but increases subsidies to long-term technology development by corporate-academic-government research partnerships. We cannot dispute the need for engineering and basic research, but we seriously question whether it can only proceed if funding can be taken from low-income homes.

The cut will deny about 26,000 households the lasting and immediate bill reductions they expected to receive next year, after being wait-listed for "their turn" for several years. The planned termination of the program by 2010 will mean the difference between sickness and health and between stability and homelessness for millions of consumers now eligible for this important assistance. These sad effects will be realized decades before the new energy economy provides any relief. It is an unnecessary sacrifice.

The planned termination of the program means a cadre of thousands of skilled workers which is ready now to put the best available tools, new techniques and state-of-the art insulating materials and equipment in hundreds of thousands of buildings, will be diverted to the conventional construction work they perform when not delivering Weatherization today. Two decades of Federal investment in training and new materials may be lost.

As you are aware, even the administration has not retreated from its conviction that Weatherization operates efficiently and produces solid results in energy savings, safer homes and lower bills. In fact, the Secretary issued the following statement on April 3, 2006:

"Washington, DC.—U.S. Department of Energy (DOE) Secretary Samuel W. Bodman today announced $140.3 million in weatherization program grants to 31 States and the Navajo Nation to make energy efficiency improvements in homes of low-income families; weatherization can reduce an average home's energy costs by $358 annually. Total fiscal year 2006 funding is $243 million and will provide weatherization to approximately 96,560 homes. 'Weatherizing your home is a valuable way to save energy and money,' Secretary Bodman said. 'The Department of Energy's weatherization program will help nearly 97,000 families make their homes more energy efficient.'

"For every dollar spent, weatherization returns $1.53 in energy savings over the life of the measures. DOE's weatherization program performs energy audits to identify the most cost-effective measures for each home, which typically includes adding insulation, reducing air infiltration, servicing heating and cooling systems, and providing health and safety diagnostic services. Other benefits of weatherization include increased housing affordability, increased property values, job creation, lower owner and renter turnover, and reduced fire risks."

There was strong Senate support for the Energy Policy Act when it passed not even 1 year ago; it not only preserved, it more than doubled, the authorized size

of the Weatherization program by 2008. That Act signaled to the hundreds of thousands of low-income Americans on waiting lists for our energy services that the Congress is not only committed to incentives for long-term technological advances that transform our infrastructure; it sent the message that Congress intends to offer them effective permanent relief by reducing improving their dilapidated, wasteful housing as soon as possible.

Those weatherized in the past can expect their fiscal year 2006 household energy bills will be $400 to $462 lowers than they would have been without the DOE program's investment. These average savings alone represent nearly a month's income to many of the elderly participants who rely solely on Supplemental Social Security, and are about one-quarter of the energy bills that will drain the resources of the average un-weatherized low-income consumer over the course of this fiscal year. The Department of Energy figure of $358 is the multi-year average expected based on long-term price forecasts. In years like this one, extreme prices mean better protection for that Weatherized. Community Action Agencies are fully aware that the $600 million fiscal year 2008 authorization is really an indicator of the direction the Congress is committed to follow, not a funding level. We urge the subcommittee to stay the policy course laid out last summer by, at the very least, sustaining the Weatherization program.

When our Nation first took controls off oil prices, and again when Americans were promised that electricity competition would drive the price of residential power down, an accompanying policy promise was that the poor would be protected from the risk of un-affordable energy. The promises have not been honored fully, but the Weatherization program, expanded as part of the original "social bargain" on energy in 1979, has evolved as a small but steady source of investment in lasting relief. The poor need Weatherization program investments for their houses because they lack the credit card, the savings, or the income to buy the home improvements that pay off steadily, year after year.

This year, nearly all American consumers have needed relief from energy prices, and millions of homeowners installed more insulation, repaired air leakage, and upgraded to more efficient equipment to stay warm and to keep their electrical devices running at lower cost. We all know conservation is the best and quickest bill reduction strategy, and most of us can use our energy more carefully. However, the low-income consumers already use less than 80 percent of the home energy that the average American uses even though their homes burn about one-third more gas or heating oil per sq. ft. because of their age and poor quality. There is not as much margin for the poor to cut back before indoor temperatures become dangerously low or high in summer.

Community Action's mission is to change the causes of poverty; wasteful and unhealthy housing can indeed be transformed by Weatherization, and CAAs consider it one of our most effective programs; it makes a lasting change for the family; it produces immediate reduction in energy bills, upgrades the building stock, and broadens the technical competence of the local building trades.

We also request that the subcommittee take two further initiatives that impose no cost. They are to:

—Request reporting from DOE that indicates how the Department is fulfilling the many responsibilities it is assigned under the statute following dramatic staffing reductions of the past 3 years and the reorganization expected on July 1, 2006, and

—Consider proposing a role for the skilled Weatherization workforce, when and if you review budgets for other Federal or State programs that bring energy efficient materials and technology to the residential market as a whole or to the task of building affordable housing in the Gulf Coast communities. Weatherizers are ready respond to energy-related consumer needs using other funds, and they can do more. For example, tens of millions of LIHEAP funds are spent to replace broken, dangerous and wasteful furnaces and other equipment. A program to subsidize more Energy Star equipment for low-income housing would soon result in many safer, warmer homes and transform the market for Energy Star equipment.

Many Weatherization providers are already partners in community development projects that are using renewable funds and new efficient green construction techniques. Funding comes from private partners, State and Federal housing programs and State utility system benefit funds. In fact, Weatherization programs are able to win non-Federal funds and partners because of their capacity and their strict accountability, both products of the DOE program. We estimate our network of Weatherizers will have delivered $700 million in energy and housing services to the poor by the end of program year 2006, of which just over one-third comes from the core DOE program. This means Weatherization has the capacity to grow in response

to the urgent national need to use energy more responsibly. The subcommittee's past support has already allowed the program to get more done in this program year and Weatherization providers look forward to as much responsibility as you can possible assign in the coming fiscal year.

PREPARED STATEMENT OF THE NATIONAL HYDROGEN ASSOCIATION

Chairman Domenici, Ranking Member Reid and honorable members of the committee, on behalf of the 100 members of the National Hydrogen Association (NHA), I would like to thank you for the opportunity to enter into the record testimony on the funding for hydrogen programs in the Department of Energy's fiscal year 2007 congressional budget request. For over 17 years, we have been an association dedicated to pursuing the research, development and demonstration of hydrogen and fuel cell technologies, leading to a firm basis for establishing and growing a commercial Hydrogen Economy.

SUMMARY

My testimony will make the following points that reflect the NHA's policy priorities:

—Full funding of the Technology Validation Program;
—Full funding of the hydrogen provisions in the Energy Policy Act of 2005 (EPAct 05—Public Law 109–58);
—Support for other enabling legislation and appropriations.

TECHNOLOGY VALIDATION PROGRAM

The validation program has ambitious and critical goals concerning durability, vehicle range, storage, attainable hydrogen fuel cost, data reporting, technology evolution, renewable hydrogen feedstock generation, codes and standards coordination and public outreach. Teams combine the efforts of both vehicle manufacturers and energy companies in 5-year partnerships, along with several other research firms, universities and National Laboratories. Here is why DoE's validation program is so important:

—The team projects involved in these "Learning Demonstrations" include detailed concepts for diverse and flexible approaches to vehicles, supply and infrastructure.
—Unique, historic partnerships have been formed between fuel, auto, and research firms—critical to reinventing new corporate relationships and making new markets succeed.
—The operational relationship between system components (hydrogen supply, onboard storage, vehicle, fuel cell, drive train) has to be learned in practice—it cannot be fully evaluated by simulations or bench testing. Successful integration of new components is difficult, and real problems must be solved in a commercial operating environment.
—Evolution of new technology is greatly assisted by bringing systems out of the lab, punishing them under real conditions, remedying the failures, and sending intractable problems back to the lab—while redesigning new demos. The quest toward commercialization will occur in many iterative steps.
—If funding were to lag, the Federal Government might become a less reliable partner, key parts of the partnerships could soften, and the scale of U.S. activity could shrink toward marginal ideas. The centroid of hydrogen development may move away from the United States.

ENERGY POLICY ACT PROVISIONS

Although the fiscal year 2007 budget request continues to build on the strong foundation of the President's Hydrogen Fuel Initiative—a 5-year commitment expiring in 2008—EPAct 05 gave the entire hydrogen program permanent authority. As a consequence, DoE has much work to do to implement the Act.

We certainly concur with the letters sent to Secretary Bodman and President Bush by the House and Senate (respectively) in late 2005 that asked for full funding of the hydrogen provisions in EPAct 05, without adverse impacts on the other energy efficiency and renewable energy programs in DoE. Specifically, the Dec. 21, 2005, bipartisan Senate letter highlights how the EPAct 05 makes the Federal Government a more reliable partner in building the Hydrogen Economy:

"The Secretary's scope of action has been expanded in key areas, and the hydrogen and fuel cell program has acquired considerable stability by its permanent authorization. Renewed focus on research, development, demonstration and state and

Federal purchase for early market transition will give the Secretary and industry higher quality technical options sooner."

Further,

"Technology validations, the heart of the learning demonstration partnerships with industry, need to grow to include fleets of advanced vehicles, particularly light duty vehicles, transit buses, agricultural industrial and heavy duty vehicles."

And,

"To achieve the acceleration of our efforts to build a hydrogen economy, we specifically recommend that the fiscal year 2007 budget request reflect the authorized levels of spending that have been approved by Congress in Titles VII and VIII of the Energy Policy Act of 2005."

DOE HYDROGEN PROGRAMS

The President's Hydrogen Fuel Initiative continues its strong run, with increased funding over fiscal year 2006. The hydrogen programs in EPAct 05 built on the success of that initiative, which began in 2004 and might have ended in fiscal year 2008, but it has some ambitious 2015 goals that were being actualized by appropriations only 1 year at a time. This annual approach would have had a slim chance of realizing such long range goals and designs into the program an inherent lack of stability, particularly for the critical learning demonstrations.

As a baseline, the actual Title VII and Title VIIII request for hydrogen is $246 million (EERE + Science), or only 47.5 percent of EPAct 05's $517.5 million. Additional hydrogen funding is included for the nuclear and fossil energy programs. Plus, the authorized activities under Title VII Vehicles and Fuels, have not been addressed in program planning, let alone in the funding request. Although the Senate Energy Committee agreed in October 2005 to forego activities for fiscal year 2006 under Title VII at DoE's request, DoE agreed that this did not apply to fiscal year 2007. Nevertheless, there is much to do under sections 782 and 783 that does not require funding, but DoE's dedication to the principles contained in the law. These shortfalls need explanation.

Additionally, there are three important studies in Sections 1819, 1820 and 1825 that deserve to be completed soon by DoE and would help inform industry and the Congress—that deal respectively with resolving international participation in the hydrogen program, economic development and employment aspects of a hydrogen economy, and a long-term Federal funding roadmap plus the carbon effects from a fully-realized hydrogen economy. These sections originated with Senators Alexander, Dorgan and Levin respectively, had strong industry and bipartisan support and were adopted by unanimous consent in the Senate's Energy Bill, S. 10, and in the Conference Report for Public Law 109–58. We applaud DoE's foresight in issuing a solicitation for the Section 1820 study, which is to be completed in late October.

On a positive note, DoE budget displays show that Technology Validation does receive about an 18 percent increase in fiscal year 2007 over fiscal year 2006 appropriations ($33.6 million vs. $39.6 million). The favorable increases in the Fossil Energy budget request for hydrogen activities are worth noting—but we would especially like to see more emphasis on hydrogen production from advanced, safe nuclear power. And given the magnitude of our national coal resources, FutureGen will simply need more stable funding over a longer time span.

CONCLUSION

We urge the committee to preserve these gains in the appropriations process, and add to them to be more consistent with EPAct 05. Continued funding growth is designed into EPAct 05 that is intended to accelerate the programs' achievements, and create a far larger benefit pool than could be realized by R&D alone. After all, the job is to commercialize the results of R&D, along with that careful technical exploration.

We would like to see member requests moderate somewhat, and especially be tied more closely to DoE's planning goals for technology development. DoE's administration of these member requests also needs improvement, so that accommodating them does not mistakenly worsen the adverse impact to existing and mortgaged multiyear projects.

We thank you for the opportunity to submit this testimony. We look forward to continuing a fruitful working relationship with the committee, its staff, and all our stakeholders in building a successful Hydrogen Economy.

PREPARED STATEMENT OF THE AMERICAN CHEMICAL SOCIETY

The American Chemical Society (ACS) would like to thank Chairman Peter Domenici and Ranking Member Harry Reid for the opportunity to submit testimony for the record on the Energy and Water Appropriations bill for fiscal year 2007. For fiscal year 2007, ACS requests the Department of Energy Office of Science be fully funded at President Bush's request of $4.102 billion.

ACS is a non-profit scientific and educational organization, chartered by Congress, representing more than 159,000 individual chemical scientists and engineers. The world's largest scientific society, ACS advances the chemical enterprise, increases public understanding of chemistry, and brings its expertise to bear on State and national matters.

As Congress and the administration seek to bolster the economy, economists agree that investments in basic research boost long-term economic growth more than other areas of Federal spending. Numerous recent reports cite the growing challenges American faces from global competitors, including the National Academies of Science report "Rising Above the Gathering Storm".

Basic physical science investments foster the new technologies and train the scientific workforce which drive the Nation's public health, defense, energy security, and environmental progress. Although industry funds the bulk of national R&D, the Federal Government provides 60 percent of basic research funding and, remarkably, 40 percent of patents cite Federal research as their source. Yet Federal research in the physical sciences and engineering has been cut in half since 1970 as a percentage of GDP. Fortunately, the President, top Congressional leaders, and members of science and industry have all recognized the need to boost investment in physical sciences and engineering research. This investment has never been more important given its central role in advancing the Nation's economic, energy, and homeland security.

ACS BUDGET RECOMMENDATIONS

Current Federal efforts to advance energy efficiency, production, and new energy sources while reducing air pollution and other environmental impacts will demand increased investment in long-term energy research. By supporting people, research, and world-class science and engineering facilities, the Department of Energy's Office of Science expands the frontiers of science in areas critical to DOE's energy, environment, and national security missions.

The President's budget request represents visionary leadership to ensure American competitiveness and innovation by providing the largest investment in DOE Office of Science in over two decades. Many in Congress have joined with the President in calling for expanded investment in basic physical science research. The President's request for $4.102 billion is consistent with authorized spending levels in Public Law 109–57 and is essential to ensuring the strength of our innovation economy.

Increases in the Office of Science will help reverse the declining Federal support for physical science and encourage more students to pursue degrees in these fields. The Office of Science is the largest Federal supporter of research in the physical sciences, funding almost 40 percent of research in these fields. The Office of Science fosters the new discoveries and technical talent that will continue to be essential to advances in coal, hydrogen, biomass, genomics, and many other technology areas. Additional funds should be directed to increase the number of grants, especially in core energy programs, and to improve research facilities. The Office is the primary source of Federal support in many research areas essential to our energy security and economy, such as catalysis, carbon cycle research, photovoltaics, combustion, and advanced computing. Increased investment is also important given the declining private support for long-term energy research.

INCREASE GRANTS IN CORE PROGRAMS

ACS recommends that increases for the Office of Science be directed to advancing core energy research across disciplines, which enables DOE to respond rapidly to new challenges. For example, DOE capitalized on long-term atmospheric chemistry research, particularly in aerosols, and quickly developed a single anthrax-bacterium detector. DOE must strengthen its ability to attract scientists and train the next generation of scientists and engineers by increasing the number of grants in its core programs without reducing their size and duration. Current appropriations allow the DOE Office of Science to fund one-third the proposals as the National Institutes of Health and the National Science Foundation. This rate is considerably lower than

those of other agencies and amounts to lost opportunities for both significant discoveries and the education of the next generation of scientists and engineers.

Within the Office of Science, ACS particularly supports the Basic Energy Sciences and Biological and Environmental Research programs. As the cornerstone of the Office, the Basic Energy Sciences (BES) program supports an array of long-term basic research to improve energy production and use and reduce the environmental impact of those activities. The BES program manages almost all of DOE's scientific user-facilities, and provides leading support for nanotechnology and advanced computing research—two priority research areas that will have important implications for energy efficiency and security. The Biological and Environmental Research (BER) program advances fundamental understanding in fields such as waste processing, bioremediation, and atmospheric chemistry to better understand potential long-term health and environmental effects of energy production and use and identify opportunities to prevent pollution. Progress in these fields is also needed to develop and advance new, effective, and efficient processes for the remediation and restoration of DOE weapons production sites. ACS supports a strong role for DOE in Federal efforts to advance pollution prevention and climate change research.

DOE AND THE SCIENTIFIC WORKFORCE

As the largest supporter of research in the physical sciences, DOE can greatly affect the training and number of scientists in industry, government and academia. Inadequate investment in any research field constricts the supply of trained scientists and engineers who apply research and develop new technology. For instance, declining support for nuclear science and engineering will greatly affect the nuclear sector as a majority of today's nuclear scientists and engineers near retirement. Another example is the synergistic relationship between the need for radiochemists and NIH's ability to conduct clinical trials. Advances in diagnosis and treatment in nuclear medicine are dependent on the synthesis of highly specific radiopharmaceuticals that target biological processes in normal and diseased tissues. The Office of Science, through BER supported research, occupies a critical place in the field of radiopharmaceutical research. The NIH relies on the Office of Science's basic research to enable clinical trials.

Another way for DOE to help attract students and retain talented scientists and engineers is to renew investments in scientific infrastructure. The Office of Science operates one of the most extensive and remarkable collection of scientific user facilities in the world, providing tools for research for more than 18,000 scientists funded by DOE, other Federal agencies, and industry. Many facilities are in poor condition or have outmoded instrumentation. Additional funding would allow for increased operating time, upgrades, instrumentation, and technical support. The proposed cuts could result in established facilities lying idle, allowing taxpayer investments to go unused.

National laboratories also play an important role in providing research and training opportunities to enhance the university curriculum. ACS supports the initial plan by DOE to utilize its national laboratories to help mentor and train science teachers. Students at all levels clearly learn better when their teachers have a deep understanding of the subject, and the first-rate multidisciplinary research and scientific professionals at the national laboratories certainly could be a rich resource for science and math teachers. ACS urges stronger coordination among agencies with significant K–12 math and science programs in order to maximize the Federal investment in this area.

ACS praises the work of Department of Energy leadership, and particularly Office of Science Director Ray Orbach, to establish a vision of America's scientific future with the 20-year facilities plan and a forward-thinking departmental strategic plan. ACS views these documents, along with the Secretary of Energy's Advisory Board report "Critical Choices: Science, Energy, and Security" as key elements of America's research and development portfolio. Growth in DOE Science funding is essential to realizing the goals in these documents, and ACS urges Congress to act to ensure this vision of a technologically advanced and safe America comes to fruition.

PREPARED STATEMENT OF THE NATIONAL RESEARCH CENTER FOR COAL AND ENERGY, WEST VIRGINIA UNIVERSITY

Chairman Domenici, Ranking Member Reid, and members of the subcommittee, coal supplies over half of our Nation's electricity and provides a viable alternative to produce transportation fuels, chemicals, and gaseous fuels. Previous coal research programs supported by Congress resulted in reduced emissions of criteria pollutants and increased efficiency in electricity generation at coal-fired central stations. Con-

gressional support for energy efficiency programs has led to increased efficiency in our energy-intensive industries and in our transportation sector. This statement is offered to urge continued strong investments in the Nation's fossil fuel and key energy efficiency programs. My testimony consists of general recommendations to maintain critical levels of funding in major energy programs and specific requests for support of projects in selected energy sectors. I have also included recommendations regarding the benefits of supporting academic research as a part of our national energy programs.

FOSSIL ENERGY PROGRAMS

We require continued investments in finding ways to use our indigenous fossil energy resources in an economical and environmentally friendly manner. While the administration speaks supportively for increased research for fossil fuel programs, I believe critical energy programs are under-funded in the fiscal year 2007 budget request.

Coal Programs

Clean Coal Power Initiative.—The administration has proposed only $5 million for the Clean Coal Power Initiative (CCPI) for fiscal year 2007. Many owner-operators are hesitant to install new clean coal technologies unless they have been successfully demonstrated at commercial scale. The CCPI program is designed to conduct demonstrations in technology areas such as mercury control and advanced power cycles, both of which are of great national interest. We must also demonstrate coal-to-liquids technologies as part of the Clean Coal Power Initiative. Funding should be provided to the CCPI program at levels which would allow a solicitation for new proposals in early 2007 so that we can continue needed work to deploy advanced technologies for power generation and alternative fuels production.

Innovations for Existing Plants.—A robust research program is also needed for existing plants. The national installed coal power generation capacity of over 300 gigawatts will be in service far into the future since their premature replacement cost is expensive. Environmental concerns dictate that we make improvements in the existing fleet while we await the opportunity to install newer technologies when the existing plants are retired. The funding recommended by the administration in the budget line for Innovations for Existing Plants has been severely reduced for the fiscal year 2007. We recommend that an additional $8 million be added to the Innovations for Existing Plants line, including full restoration ($2.5 million) of the By-Products and Water Management sub-element. This sub-element funds critical programs for reducing mercury emissions and finds new ways to use the byproducts generated by combustion, both key elements in reaching the goal of a zero-emissions coal plant. Water shortages in some parts of the Nation are beginning to limit the installation of new power plants. We also recommend funding for programs to minimize the use of water in power generation and coal conversion applications.

Coal-to-liquids Research/Fuels Program.—Transforming coal into liquids would enable our Nation to reduce our dependence on imported petroleum. Polygeneration plants—those plants which produce a suite of products beside electricity—will hasten the deployment of advanced gasification technologies since co-producing value-added products such as hydrogen, liquid transportation fuels, synthetic natural gas, and/or chemicals improves the economics of the overall system. We recommend the addition of $10 million to the Fuels Program for coal-to-liquids research to improve current conversion technologies and to develop new conversion processes, for computer-based design studies, and for systems modeling. A national program to reinstate our earlier coal-to-liquids programs is urgently needed to enable our country to maintain stable transportation fuel costs. We request that the work initiated in fiscal year 2006 to study the development of coal liquefaction facilities in China be continued at the level of $0.7 million. This program is a minimal investment compared to the $1.4 billion cost of the Chinese facility and will provide valuable information relevant to the deployment of advanced fuel production technologies in the United States.

Solid Fuels and Feedstocks Research/Fuels Program.—Successful deployment of coal conversion technologies depends in part on the quality of the feedstock in the input coal stream. Advanced research is needed to reduce levels of mercury emitted from pulverized coal combustion systems and to remove other pollutants upstream of the combustor. Often the preparation process results in discarding a large percentage of the coal mined because of the difficulty of dewatering and separating the coal fines from refuse material. These discards result in environmental pollution, the possibility of a catastrophe due to failures of water impoundments that retain the coal fines for settling, and increased costs for electricity. We request that the current funding for advanced separations research be increased to $3 million for fis-

cal year 2007. Another important aspect of the solid fuels research program relates to producing value-added products such as carbon materials from coal. Lightweight carbon materials produced from coal, if used in applications such as the transportation sector to reduce vehicle weight, also serve to reduce our dependence on imported petroleum. We request that the lightweight composite materials program initiated in fiscal year 2006 be continued.

Focus Area for Computational Energy Science.—The President has identified supercomputing as critical to America's national security and essential to U.S. competitiveness, both technologically and scientifically. The President has called for increased funding to enhance this important tool and expand its use across a broad range of applications that enhance the U.S. position in the world's scientific community. Through modeling, various designs can be evaluated on computers at a much lower cost than for actual experimental research. The Computational Energy Sciences (CES) program in Fossil Energy supports supercomputing research both within the National Energy Technology Laboratory and for external researchers who receive grants for blocks of time on high-speed resources such as the Pittsburgh Supercomputing Center. However, the administration has recommended drastic cuts in the CES program for fiscal year 2007. We recommend that funding for Computational Energy Sciences be restored to its historic level of $5 million, of which $2 million should be allocated to continue the program of the SuperComputing Science Consortium (SC Squared) which supports high speed computer access for the fossil energy research community in academic institutions nationwide.

Oil and Natural Gas Programs

We are disappointed that the administration has chosen to recommend closing out the programs for oil and natural gas research in exploration and production. These programs provide important contributions to small producers, who can not afford the major expense of developing new technologies to recover a dwindling supply of these precious reserves. We recommend that Congress restore the oil and natural gas programs to at least the fiscal year 2006 levels. We request that funding be provided to continue important programs like the Petroleum Technology Transfer Council (PTTC), a nationwide program implemented through ten regional centers which reach user communities in our major oil and gas basins. The PTTC identifies and provides upstream technologies and technical assistance to small domestic producers. Without the resources available through the PTTC program, many small producers would become uncompetitive, further decreasing domestic oil and natural gas production.

ENERGY EFFICIENCY AND RENEWABLE ENERGY PROGRAMS

The United States is increasingly becoming dependent on imported energy. Significant amounts of natural gas and electricity are delivered from Canada. Oil is supplied from Canada, Mexico, and other regions world-wide, some of which have unstable governments or philosophies which differ from our national best interests. The following comments are offered regarding programs considered key to maintaining our energy security and energy independence.

Industries of the Future

High energy prices have been a major reason for the loss of competitiveness of many of our energy-intensive industries over the past several years. Glass, aluminum, steel, chemical, coal and metals industries face stiff competition on the global market and are increasingly losing ground to international competition. Much of our chemical industry has already moved offshore.

The Industries of the Future (IOF) program provides one avenue for increasing the efficiency of production and reducing costs in energy-intensive industries. However, the administration has reduced its recommendations for funding the IOF (specific) program from the enacted level of $37 million in fiscal year 2005 to a request of only $17 million for fiscal year 2007. These reductions severely impact our ability to assist energy-intensive industries. We recommend that funding be restored to the fiscal year 2005 level. In particular, funding for the Mining sector program should be restored to $4 million to enable completion of previously-awarded projects and the initiation of new research. With our Nation poised to be ever more reliant on coal for our energy needs, newer technologies must be developed to mine the harder-to-get coal as our resource base is depleted.

Electricity Distribution

Despite the unpleasant experience of the mid-summer East Coast energy blackout several years ago, the electric grid remains fragile and in danger of overloading in times of high demand. Improvements to the electric grid would ensure operational

reliability, reduce costs to the general public, and make our industries more competitive. Congressional support for continued investments in improving the reliability of the electric grid is recommended. Particular emphasis should be placed on maintaining and expanding the electricity transmission, distribution, and energy assurance R&D at the National Energy Technology Laboratory (NETL). We request that the Gridwise project on Integrated Control of Next Generation Power Systems initiated in fiscal year 2006 be continued at the level of $1 million.

Transportation Research / Office of Vehicle Technologies

The research conducted under the Vehicle Technologies program will lead to the development of more energy-efficient and environmentally-friendly highway transportation technologies that will reduce the use of petroleum. The ability to test the performance of cars and trucks under field operating conditions is an essential part of this program. West Virginia University's Transportable Emissions Testing Laboratory has partnered with the Office of Vehicle Technologies for many years to conduct emissions measurement testing programs at locations nationwide. We recommend continued congressional support for this partnership and request that $2 million of the Vehicle Technologies budget be directed to continue the transportable emissions testing laboratory program in fiscal year 2007.

CLOSING COMMENTS ON NEED FOR ACADEMIC RESEARCH PROGRAMS

Budget constraints for fiscal year 2007 will give rise to difficult decisions regarding which programs to fund. Fossil Energy and Energy Efficiency programs merit high consideration from the subcommittee because of their importance to our national security and our economic interests.

In your deliberations, I urge the subcommittee to give consideration to supporting or creating programs directed to academic research institutions. During the debate leading to the passage of the Energy Policy Act of 2005, several initiatives were introduced to support centers of excellence in coal technology, mining technology, and power systems technology. Energy research is high on the agenda for most, if not all, academic institutions. Current opportunities for academic researchers to compete for funding in fossil energy and energy efficiency areas are limited in the budget requests. For example, the Fossil Energy advanced research program has a budget of only $3 million to support coal research nationwide and no comparable programs in oil and natural gas. Mining research opportunities will be eliminated if the administration budget request for the Industries of the Future program is supported by Congress. With the elimination of the U.S. Bureau of Mines, there is no standing program for advanced mining research.

Funding to support academic research has many benefits. Advanced research ideas are generated from such studies. Of almost equal importance is the aspect of maintaining the human capital to conduct advanced research in key areas. The dearth of support for mining technology research is responsible in part for the smaller number of mining engineering departments nationwide. We face a critical shortage of mining engineering graduates, an aging cadre of professors, and a smaller number of institutions which offer mining programs. Researchers skilled in coal geology/petrology and in coal conversion technologies such as direct and indirect liquefaction are becoming older and we face a potential shortage of such expertise once these individuals retire. Once this expertise of human capital is lost, we will be in danger of having to import our technologists or possibly redoing older research since the corporate body of expertise is lost. Supporting academic research also leads to spin-off technologies which support economic development and, in the case of energy, can assist the United States in staying the leader in promoting advanced technologies to address the challenges we face in meeting a global demand for energy.

I urge Congress to consider the benefits of supporting fundamental research at academic institutions as part of our national plan for energy and economic security.

Thank you for considering the recommendations offered in this testimony.

PREPARED STATEMENT OF IBACOS, INC.

IBACOS (Integrated Building And Construction Solutions) urges the Subcommittee on Energy and Water to provide $23 million for the Department of Energy's (DOE) fiscal year 2007 Residential Buildings Integration Program (formally Building America). We further urge that the following language is included to ensure that the competitively selected Building America teams are funded at a percentage comparable to their historic funding: "Of these funds, $15 million shall be provided for the research activities of the competitively selected Building America research teams and the Building America lead research laboratory".

IBACOS, through DOE, performs significant research into achieving new levels of energy efficiency in our Nation's housing stock.—IBACOS began working with the DOE's Building America Program as the founding team in 1993. The work of IBACOS and the other Building America teams has allowed industry leadership to drive cost-effective solutions that increase the baseline energy efficiency of the Nation's housing stock, and most recently, to begin to move us towards Zero Energy Homes (homes that produce as much energy as they use). Building America partners have shown that homes with significantly improved efficiency levels can be built at equal or lower purchase prices than conventional homes, with much lower energy bills and operating costs. These homes also exhibit increased building durability as well as improved occupant safety, health, and comfort. The research needed to develop systems and strategies to achieve the long-term goal of Zero Energy Homes is not simply applying lessons learned; rather, fundamental research is still required. This R&D, performed by the Building America teams is truly high-risk, high-payoff research. The research required to meet the goal of Zero Energy Homes is high-risk for the following reasons:

—Significant basic research is required to develop and integrate new technologies and systems into homes before they are proven effective enough to be applied in the field.

—This research is costly and risky and will obsolete several current products, systems and processes, and therefore will not be undertaken by the industry alone.

—The life cycle of this research is significantly longer than that of comparable industries.

—The homebuilding industry is extremely fragmented, with homebuilders having little ability to drive research, and a lower-than-average financial commitment to investment.

—Mechanisms do not currently exist within the homebuilding industry to integrate new technologies and strategies effectively.

However, the research required to meet the goal of Zero Energy Homes is also high-payoff for the following reasons:

—Once constructed, homes have the longest lifespan of any consumer product, providing the opportunity for a durable long-term reduction in energy use.

—Effective strategies to reduce energy use will positively impact consumers, as well as the Nation's energy demand.

—Successful research into integration strategies will allow new, high-risk, market-leading technologies and systems to be adopted more quickly and effectively.

IBACOS, through DOE, supports the improvement of the residential construction industry and provides support and recommendations to critical Federal programs.—The Building America Program consists of five industry consortia (teams). Along with the four other teams, we partner with more than 300 residential builders, developers, designers, equipment suppliers, and community planners throughout the United States. All Building America partners have a common interest in improving the energy efficiency and livability of America's housing stock, while minimizing any increase in overall homeownership costs. Many of the systems used actually result in a lower cost, while others create only marginal increases in first cost and absolute overall reductions in annual homeowner cash flow. The five Building America teams pursue a collaborative agenda that will ultimately assist all homebuilders and benefit the Nations' homebuyers. In addition to performing the fundamental research needed to advance the energy efficiency of our Nation's housing stock, IBACOS and the Building America teams provide recommendations to a broad range of residential deployment partners including the EPA's ENERGY STAR Homes Program, HUD's Partnership for Advancing Technologies in Housing Program, and many industry associations and universities. Furthermore, the Teams are perhaps the best resource for DOE to educate the builder community on technology and integration breakthroughs. This education has been, in part, demonstrated through successful projects, where high-efficiency housing is being built and bought, such as Summerset at Frick Park (Pittsburgh, PA); Noisette (North Charleston, SC); Civano (Tucson, AZ); Pulte Home Sciences in VA; Forest Glen (Carol Stream, IL); Hunters Point Shipyard (San Francisco, CA); Stapleton (Denver, CO); Habitat for Humanity (GA, CO, TN, FL, MI, TX and throughout the United States); Summerfield (San Antonio, TX); Sun City (Las Vegas, NV); Premier Gardens (Rancho Cordova, CA) and others throughout the Nation as documented on www.buildingamerica.gov. The more than 300 private sector partners who work with the teams are experts in home construction, building products and supply, architecture, engineering, community planning, and mortgage lending. All construction material and labor costs for homes and communities constructed by Building America Teams are provided by DOE's private sector partners.

The IBACOS Building America Team is made up of more than 30 leading companies from the home building industry, including equipment manufacturers, builders, design firms, and other parties interested in improving the overall quality, affordability, and efficiency of our Nation's homes and communities. Although we are located in Pittsburgh, PA, our team members come from across the country. Our building product manufacturer, trade association, and non-profit partners include: North American Insulation Manufacturers Association (NAIMA) of Washington, DC; Dupont of Wilmington, DE; Carrier Corporation of Indianapolis, IN; Whirlpool of Benton Harbor, MI; USG Corporation of Chicago, IL; Lithonia of Conyers, GA; Georgia Pacific of Atlanta, GA; The Portland Cement Association of Skokie, IL; Whirlpool Corporation of Benton Harbor, MI; Cardinal Glass Industries of Eden Prarie, MN; Florida Heat Pump of Fort Lauderdale, FL; Owens Corning of Toledo, OH; E-Star Colorado of Denver, CO; and e-colab of Urbana, IL. Our range of builder and developer partners includes Pulte Homes of Bloomfield Hills, MI; Tindall Homes of Trenton, NJ; Aspen Homes of Loveland, CO; Hedgewood Homes of Atlanta, GA; Pine Mountain Builders of Pine Mountain, GA; Summerset Development Partners of Pittsburgh, PA; Noisette Development Partners of North Charleston, SC; Forest City Stapleton of Denver, CO; Solar Strategies of Philadelphia, PA; Civano Development Partners of Tucson, AZ; Washington Homes (a division of K. Hovnanian) of VA; Landmark Building and Renovation of Apex, NC; and Bozzuto Homes of Greenbelt, MD. Other builder and developer partners are located in CA, CO, FL, GA, IN, MA, ME, MN, NC, NJ, NY, NV, PA, and UT. Through these and other partners, the Building America Program has had direct influence in increasing the efficiency of nearly 30,000 homes to date. All of these homes use at least 30 percent less energy than a code-compliant home, and many exceed 50 percent in savings. All work done in these projects is part of the critical path toward achieving Zero Energy Homes.

Through DOE, significant energy-saving results have been achieved in residential construction, and encouraging research results on systems integration have helped to increase overall energy efficiency.—Results of the experience gained by the Building America teams have been reflected in both DOE and HUD roadmapping sessions, development of research priorities for National Labs, and cooperation on programs within DOE. One example is Building America's cooperative work with DOE's Windows research program to field test advanced window products with builders. Additionally, collaborative research activities with the National Labs, including NREL, ORNL, and LBNL results in the sharing of knowledge and resources to bridge the gap between Federal research programs and the industry. The Building America Program improves the affordability of homes by reducing energy use, and increasing the useful life of the homes, resulting in better use of capital and natural resources. The energy saved by a new home built to be 50 percent more efficient than average new construction is the equivalent of the energy used by a sports utility vehicle for 1 year. Investing in residential construction technology makes economic and market sense. By using improved materials and techniques, the Building America partners promote wiser use of resources and reduce the amount of waste produced in the construction process. Because of the homes' improved efficiency, emissions from electrical power will be reduced, potentially eliminating 1.4 million tons of carbon from the atmosphere over the next 10 years. DOE's residential programs will also save consumers more than $500 million each year through reduced energy bills. These savings are permanent and significant.

Building America teams, such as IBACOS, help develop and implement widespread innovation in the fragmented residential construction industry.—Residential Buildings currently account for over 20 percent of the primary energy consumed by the United States. Each year, more than 1.5 million new homes are constructed (over $70 million in revenue) and over a million are remodeled. Despite its size and impact, the industry is exceptionally fragmented. It comprises over 100,000 builders, many building only a few homes per year, others as many as 35,000. A multitude of residential product manufacturers, architects, trades, and developers further compound the problem of an industry in which it is very difficult to implement widespread technological innovation. Building America acts as an aggregator for identifying and pursuing research needs and consolidating relationships between the industry and National Labs.

There has also been little incentive for builders to improve on energy efficiency for a number of reasons. Energy and resource efficiency does not necessarily contribute to the bottom line of the builder; instead, it benefits the homeowner and the Nation, and because builders do not pay the annual energy bills, they have little incentive to add to the first cost of their product. Adopting new technologies and training staff and trades to properly install new systems and products is costly and challenging for builders. Finally, since builders are not good at sharing knowledge

among competitors, DOE's role is critical to expanding the practices beyond the first builders in. For these reasons, we are working to create higher performance, quality homes at low or no incremental costs, along with associated training, management, and technology transfer methodologies. We believe that because of this work, energy and resource efficiency, durability, and affordability will eventually be commonplace in the home building industry. A long-term and consistent commitment must be made to work in partnership with the housing industry. DOE's Building America Program is a proven industry-driven research approach that can reduce the average energy use in new housing by 50 percent by 2015, providing significant benefits to homeowners while benefiting the U.S. economy by maintaining housing as a major source of jobs and economic growth. Without building in significant energy savings now, the Nation risks using an extravagant amount of energy in the future. We must invest appropriately in technology, systems integration research, and builder operational processes needed to upgrade the performance of our housing stock, otherwise, we are mortgaging our future.

Building America is the key element in the DOE's strategy to reduce residential energy consumption.—Research, development, and outreach activities performed by the competitively-selected industry Teams in the Building America Program are the key element in the Department of Energy's strategy to reduce energy consumption in residential buildings. The Teams' activities focus on increasing the performance of new and existing homes that can be implemented on a production basis, while meeting consumer and building performance requirements. The Teams have been working on improving efficiency in housing since 1992, with successes being embodied in ENERGY STAR Home program and adoption by many production builders. We are now focused on the more difficult goal of creating strategies to achieve Zero Energy Homes. Current DOE-led research activities include:

—Systems integration, technology, and process research to ensure quality and performance;
—Indoor air quality, safety, health, and durability of housing;
—Thermal distribution efficiency, mechanical systems efficiencies and appropriate sizing;
—Incorporation of passive and active solar techniques;
—Techniques that increase productivity and product quality and reduce material waste;
—Use of recycled and recyclable materials; and,
—Building materials improvements and envelope load reduction and durability.

RECOMMENDATION

IBACOS (Integrated Building And Construction Solutions) urges the Subcommittee on Energy and Water to provide $23 million for the Department of Energy's fiscal year 2006 Residential Buildings Integration Program (formally Building America.) We further urge that at least 60 percent or $15 million of the appropriated funding be directed towards the industry-led core Building America Teams and the Building America lead research laboratory to develop cost effective, production ready systems in five major climate zones that result in houses that produce as much energy as they use on an annual basis. Along with the industry cost-share in the program of at least 100 percent, this program has and will continue to significantly catalyze improvements in what has traditionally been a very fragmented industry.

PREPARED STATEMENT OF SAGE ELECTROCHROMICS, INC.

SAGE Electrochromics, Inc., located in Faribault, Minnesota, is a developer of energy saving electrochromic (EC) window products and is working in partnership with the U.S. Department of Energy (DOE) to develop advanced tintable window systems. The National energy savings potential of high performance electrochromic windows is approximately 0.9 Quad—equivalent to the energy use of 10,000,000 homes per year.

We at SAGE urge you to increase the current DOE annual investment in the total windows program from $4,900,000 per year to $15,000,000—Energy and Water appropriations bill for Department of Energy, Energy Efficiency and Renewable Energy, Building Technologies Program, Windows. Within this program the specific budget for dynamic and super insulated windows should be expanded to $4,000,000, up from the $500,000 currently being pursued by DOE. This funding will allow the Department to reach the goal of zero energy buildings. Activity will take place at Lawrence Berkeley National Laboratory and SAGE Electrochromics, Inc.

DESCRIPTION OF ELECTROCHROMICS

An electrochromic window (door or skylight) is a solar control device that regulates the flow of light and heat with the push of a button. The window tint can be varied from fully colored to completely clear or anywhere in between. The EC properties are achieved through thin metal oxide layers on one of the glass surfaces, otherwise the construction is similar to the standard insulating glass unit (IGU) used in millions of homes and office buildings.

THE UNIQUE BENEFITS OF ELECTROCHROMICS

Industrial and government partners in the DOE EC program are performing cost-shared research and development that will lead to significant energy and cost savings by fundamentally changing the nature and function of window products for tomorrow's buildings. Significant savings in the cooling and lighting loads can be achieved while reducing peak electricity demand. Just as important is the ability of EC technologies to improve visual and thermal comfort and thereby increase worker productivity and the aesthetics of the home or office space.

Traditionally, adding windows to a building envelope has meant reducing energy efficiency because the other materials in the structure are much more energy efficient. However, with EC technology, windows will become multifunctional energy-saving appliances in the home or office space and thereby will allow increased use of windows for aesthetic reasons.

ACHIEVING ZERO ENERGY HOMES AND BUILDINGS (ZEB)

Zero Energy Buildings, a goal set forth by DOE, takes the whole building concept to the next level by integrating advanced building technologies. ZEB will result in self-sufficient buildings that produce as much energy as they use.

Achieving DOE Energy Efficiency and Renewable Energy's (EERE) goals of Zero Energy Homes and Buildings by 2030 will require a new generation of high performance windows. An aggressive, expanded RD&D program with private and public partnerships has a high probability of successfully developing and deploying the technologies, systems, and tools needed to achieve ZEB levels of energy performance. Increasing the current DOE annual investment from $5,000,000 per year to $15,000,000 per year for a 5-year period would kick-start this effort and stimulate the much larger private sector investment needed to achieve these goals. High performance windows incorporating highly insulating properties, switchable glazings, and/or other energy efficiency features could save 0.9 Quads/year as part of the ZEB effort if the technologies can be fully developed and achieve widespread market penetration by 2030. This information is based in part on information from DOE's Lawrence Berkeley National Laboratory. The energy savings potential is equivalent to the energy use of 10,000,000 homes per year.

CREATING A DYNAMIC AND SUPER INSULATED WINDOWS R&D PROGRAM

Window systems cost American homeowners and building operators about $40 billion per year due to the heating and cooling loads they impose on our buildings. But windows can become net energy gainers rather than losers if buildings are well designed and their energy flows can be dynamically controlled.

The fundamental science and engineering supporting such goals is understood. An aggressive 5-year RD&D effort is needed to solve the critical technical market barriers, thereby reducing risks, clarifying benefits and stimulating enhanced private investment in manufacturing and marketing.

The groundwork for such a program has already been laid. In the 1980's DOE and the window and glass industry worked together to bring low-E to the market, an innovation that according to the NAS study has generated $8 billion in benefits for a modest DOE R&D investment followed by much larger private investment. In the 1990's DOE and the industry successfully promoted the development and widespread use of spectrally selective glazings and window rating systems, each leveraging large private investments and contributing to additional savings. The challenge now for the next decade is to develop the cost-effective superinsulating and switchable technologies needed to achieve ZEB performance targets.

POTENTIAL SAVINGS

As an example of the potential impacts of an enhanced RD&D program we consider the energy savings impacts of a highly insulating, switchable window in both residential and commercial buildings. These are the windows that must be developed and deployed in order to meet the EERE goal of creating practical Zero Energy Buildings. The highly insulating window has a U value or heat loss rate of 0.1 BTU/

hr-°F-sqft, about 65 percent lower than today's Energy Star window. The tintable window has the ability to control solar heat gain over a dynamic range of 5 to 1—from 0.5 in winter to allow sunlight to offset heating, to 0.1 in summer to minimize cooling, or over an even larger range of light transmission on cloudy and sunny days to control glare and daylight.

The specific energy savings will depend on the final performance values offered and on the market penetration, which in turn will depend on cost. An aggressive RD&D program would optimize thermal properties and support breakthroughs in materials science that would lower production costs, thus expanding market impacts.

RESIDENTIAL SECTOR

In homes, switchable superwindows save energy three ways. In winter at night the low heat loss reduces heating loads. During the day the switchable coating allows solar heat to enter, reducing heating loads further. In summer the switchable coating keeps the sun out on hot days and modulates as needed for night view and cloudy days. The details of heat transfer vary with the climate region but this versatile, high technology package supports the EERE ZEB goal in all U.S. climates.

Large national energy savings could be obtained over the next 30 years. In northern climates like Boston and Chicago these window technologies alone would virtually eliminate the energy loss from windows and reduce overall home energy use by an additional 25 percent compared to homes with Energy Star windows, which themselves would use 20–30 percent less energy than today's typical homes. In southern climates such as Phoenix the largest savings come from reductions in cooling loads due to the switchable glazings. In these climates the improved glazings virtually eliminate the heating load and greatly reduce the cooling impacts.

Widespread deployment after 30 years in homes in both northern and southern climates would generate average annual savings of 0.55 Quads compared to a building stock, which would otherwise have improved to meet the performance levels of Energy Star windows today.

COMMERCIAL SECTOR

In the commercial sector the switchable superwindows provide three benefits in virtually all climates: (1) they reduce the net heating loads from the windows to very low values or convert the windows to net gains; (2) they minimize the cooling loads due to the windows, and (3) by carefully modulating daylight, they provide savings of about 50 percent of the lighting energy in zones with windows or skylights.

This technology package is versatile and adaptable to fenestration designs in virtually all climates and commercial building types. It makes it easier for architects to design buildings that provide daylight and view without imposing added thermal loads. By modulating daylighting and controlling glare, it helps create productive work environments that are thermally comfortable and energy efficient, lowering electric lighting use in the process by 30–60 percent. Widespread deployment after 30 years would generate average annual savings of 0.35 Quads compared to buildings with more conventional fenestration solutions.

ADDITIONAL WORK TO BE DONE REQUIRES FURTHER INVESTMENT

Materials and Processing Research and Development.—Activities must focus on continued optimization of the device and the individual thin film layers. Improved optical performance is needed to insure user satisfaction and broad adoption of this energy-saving technology. Advanced materials for better dynamic range will result in maximum daylighting for building occupants yet still eliminate glare from computer display terminals when direct sunlight impinges on the workspace. Nanocomposite materials must be incorporated to achieve a more neutral color with enhanced fracture toughness of critical films. Low cost materials will be introduced along with rapid processing technologies (e.g. total in-line, high throughput vacuum deposition of all coatings). Additionally, solar powered EC windows with wireless control systems will be developed for ease of installation—especially in retrofit applications.

Large Area Manufacturing Technology/Engineering.—Activities should include development of rapid, large area inspection tools to reduce defects for higher yields. Also, advanced manufacturing technologies such as laser patterning and bar coding will be implemented for flexible manufacturing with reduced costs for tooling and product changeovers. High volume production of large area EC glazings will require the implementation of in-situ diagnostics for real-time automatic control of thin film uniformity. Additionally, consensus electrochromic window performance require-

ments must be developed together with standards-setting organizations and will entail significant testing in the initial stage to establish the technical basis for performance requirements.

Systems Engineering and Application.—The DOE program must include extensive field trials of electrochromic windows in buildings. Occupant feedback on performance, comfort level and other parameters will be solicited and utilized to design ergonomic control algorithms and hardware. Multiple window control should also be demonstrated to ascertain how to tie the adjacent windows together for solar management of the overall space. Long-term testing of switchable window systems over the full range of outdoor climatic conditions is required to assess product reliability.

Advanced Window Development.—As we move to Zero Energy Buildings, increasing levels of window performance will be required. Work must be initiated to produce highly insulated windows in which heat loss is reduced by at least a factor of 2 over currently available products. These windows will be integrated with EC glazings to produce the high R-value dynamic windows needed for ZEB. R&D activities include the investigation of gas filled and evacuated window cavities as well as improved edge and frame materials. Work will also be carried out to support design tools and rating systems to evaluate window efficiency.

PREPARED STATEMENT OF THE NATIONAL COALITION FOR FOOD AND AGRICULTURAL RESEARCH

Dear Mr. Chairman, Ranking Member Reid and members of the subcommittee, on behalf of the National Coalition for Food and Agricultural Research (National C–FAR), we are pleased to submit comments in strong support of enhanced public investment energy biosciences research as a critical component of Federal appropriations for fiscal year 2006 and beyond.

National C–FAR urges the subcommittee and committee to approve the President's proposal in the American Competitiveness Initiative, Advanced Energy Initiative and fiscal year 2007 budget request for an increase of 14 percent to $4.1 billion for the DOE Office of Science. Included with the President's budget request is $255 million for the Chemical Sciences, Geosciences and Energy Biosciences Division. A total of $35.8 million within the division is requested by the President for the Energy Biosciences program. We urge you to support the President's request for Basic Energy Sciences, the Chemical Sciences, Geosciences and Energy Bioscience Division and the Energy Biosciences program within the division.

At a time when our Nation's energy security is being seriously challenged, this modest increase in a small, but highly effective program is a wise investment with potentially momentous benefits to the Nation. The Department of Energy's biosciences program is an excellent example of where a modest Federal investment can yield tremendous societal benefits. Energy costs are escalating, dependence on petroleum imports is growing and concerns about greenhouse gases are rising. Research, extension and education can enhance agriculture's ability to provide new, renewable sources of energy and cleaner burning fuels, sequester carbon, and provide other environmental benefits to help address these challenges, and indeed generate value-added income for agricultural producers and stimulate rural economic development.

National C–FAR endorses the President's call in his State of the Union Address for the Nation to conduct energy research for bio-fuels to help break the Nation's addiction to foreign oil. Research on plant cellulose to produce biofuels from on crop residues, switch grass, wood chips and other sources could build on current production of ethanol and biodiesel from crops help transition a significant portion of the Nation's economy away from imported petroleum products to domestically produced bio-fuels.

The Energy Biosciences program supports world-leading research on plants and microbes conducted primarily by university-based scientists throughout the country. Competitive grants are awarded through a peer review process based on the highest standards of scientific merit.

National C–FAR applauds the Energy Biosciences program's active involvement in inter-agency cooperation and collaboration. By working closely with the U.S. Department of Agriculture, programs in both agencies benefit by leveraging funds where missions converge to advance vitally important research.

Basic energy research on plants and microbes supported by the Energy Biosciences program contributes to advances in renewable resources for fuel and other fossil resource substitutes from American agriculture, clean-up and restoration of contaminated environmental sites, and discovering new knowledge leading to homegrown products and chemicals now derived from petroleum.

The DOE Office of Science's Office of Biological and Environmental Research, through its Genomics GTL Roadmap, is undertaking an aggressive systems biology plan to accelerate the scientific discovery needed to support the development of practical applications to fulfill DOE energy and environmental missions.

The DOE–BER Plant Feedstock Genomics for Bioenergy program conducted jointly with USDA-Cooperative State Research, Education, and Extension Service-National Research Initiative supports genomics-based research that will lead to the improved use of biomass and plant feedstocks for the production of fuels such as ethanol and renewable chemical feedstocks.

National C–FAR commends the committee for its ongoing support of basic research on plants and microbes within the Energy Biosciences program and within the Office of Biological and Environmental Research. Past research sponsored by the Energy Biosciences program led to the landmark discovery of how to break down plant cellulose into ethanol. Other research sponsored by the Biosciences program led to new findings on the capture of energy from photosynthesis. Increased knowledge in this area could lead to a better understanding of how to manage carbon dioxide in the atmosphere. Further research in this area could also contribute to development of alternative energy sources.

INTEREST OF NATIONAL C–FAR

National C–FAR serves as a forum and a unified voice in support of sustaining and increasing public investment at the national level in food and agricultural research, extension and education. National C–FAR is a nonprofit, nonpartisan, consensus-based and customer-led coalition established in 2001 that brings food, agriculture, nutrition, conservation and natural resource organizations together with the food and agriculture research and extension community.[1]

National C–FAR is deeply concerned that shortfalls in funding in recent years for food and agricultural research, extension and education—both through the U.S. Department of Agriculture and through relevant programs in other agencies—jeopardize the food and agricultural community's continued ability to maintain its leadership role and respond to the multiple, demanding challenges that lie ahead. Federal funding for food and agricultural research, extension and education has been flat for over 20 years, while support for other Federal research has increased substantially. Public funding of agricultural research in the rest of the world during the same time period has reportedly increased at a nearly 30 percent faster pace.

National C–FAR believes it is imperative to lay the groundwork now to respond to the many challenges and promising opportunities ahead through Federal policies and programs needed to promote the long-term health and vitality of food and agriculture for the benefit of both consumers and producers. Stronger public investment in food and agricultural research, extension and education is essential in producing research outcomes needed to help bring about beneficial and timely solutions to multiple challenges.

As a coalition representing stakeholders in both the research, extension and education community and the "customers" who need and depend upon their outcomes, National C–FAR urges expanded public participation in the administration's research, extension and education priority setting and funding decision process and stands ready to work with the administration and other interested stakeholders in such a process.

National C–FAR appreciates the opportunity to share its views and stands ready to work with the chair and members of the subcommittee and committee in support of these important funding objectives.

PREPARED STATEMENT OF THE DEPARTMENT OF PETROLEUM AND GEOSYSTEMS ENGINEERING, THE UNIVERSITY OF TEXAS AT AUSTIN

Committee members, your committee is considering the budget for the Department of Energy, including the appropriation for the Oil and Gas technology program, which has been eliminated in the administration's proposed budget. I am writing to describe the impact the loss of this program would have on the teaching of Petroleum Engineering in the United States.

[1] As part of its mission, National C–FAR seeks to increase awareness about the value of food and agricultural research, extension and education. For example, National C–FAR is hosting an educational series of "Lunch~N~Learn" seminars on the hill, featuring leading-edge researchers on timely topics to help demonstrate the value of public investment in food and agricultural research, extension and education. More information about National C–FAR and its programs is available at http://www.ncfar.org.

My department receives 40 percent of its funding for graduate research from this one program. I believe the figure is similar at other Departments of Petroleum Engineering in the United States. Research funding is critical to graduate education in Petroleum Engineering, of course. In the short term it is the means by which graduate students attain the level of expertise necessary to advance the technology for efficient production of oil and gas. The research sponsored by this program is also crucial to undergraduate education. Over the long term it provides the means by which junior faculty attain tenure and all faculty maintain and sharpen their skills. At a modern research university it is simply impossible to maintain an undergraduate educational program without a vital graduate research program.

No other Federal program funds research in the broad field of oil and gas production. No other branch of science or engineering, including those that have substantial private funding (microelectronics or pharmaceuticals, for instance), is expected to fund university research entirely from private sources.

The loss of the lead the United States now enjoys in oil and gas technology would be a tragedy for the country. U.S. production would decrease, U.S. fields would increasingly be exploited by foreign companies, and producers in unstable parts of the world would turn to other countries for the expertise they need to exploit their own resources.

PREPARED STATEMENT OF NATIONAL WIND WATCH, INC.

INTRODUCTION

National Wind Watch™, Inc. is a non-profit organization dedicated to raising awareness of the risks and related impacts of industrial wind energy development on the environment, economy, and quality of life. The organization represents local citizen groups and individuals seeking to protect their property rights and community values, maintain nationally significant scenic resources and protect America's wildlife. The organization advocates an intellectually honest and scientifically sound assessment of the benefits and costs of industrial wind development with the objective of becoming a resource of information and assistance for individuals, local groups, and decision-makers seeking the facts about industrial wind power. Far too often, debates about wind power have over-stated its potential benefits and ignored its tremendous costs.

SUMMARY OF POSITION

National Wind Watch does not oppose funding of research and development for wind energy, but stresses that any increases in monies allocated be correctly focused. Most of any future research and development should now be focused on the detrimental impacts and mitigation techniques of wind development including, but not limited to: actual impacts on property values in areas where wind development occurs; actual net impacts on employment; life cycle analysis of environmental impacts (positive and negative); grid system stability and reliability under increasing penetration of wind, and within lower-quality wind sites. Given the inherent and perceived conflict of interest, National Wind Watch recommends that the National Renewable Energy Laboratory NOT hold responsibility for such analysis but only be permitted to participate.

SUPPORTING COMMENTS

During the debate leading up to passage of the Energy Bill in 2005 there was discussion as to whether the United States should adopt a Renewable Portfolio Standard or RPS. The Senate passed the RPS as an amendment, but the House voted it down. Senator Lamar Alexander correctly noted at the time that the RPS was "all about wind" citing factors that would limit implementation of other renewable sources including solar, hydro, and geo-thermal.

Senator Alexander also noted that, according to testimony before the Energy Committee and other sources, in order for the United States to achieve the standards in the RPS, it could "require building more than 100,000 of [the] new, massive wind turbines". Today, there are less than 7,000 such wind turbines in the United States. The U.S. Treasury Department is on record stating the wind subsidy, if renewed each year for the next 5 years, would reimburse wind investors for 25 percent of the cost of wind production and cost taxpayers $3.7 billion over those 5 years.[1] Gen-

[1] http://www.windwatch.org/documents/126, Remarks Of Senator Alexander—Windmill Legislation Introduction.

eral Electric Wind, one of the largest manufacturers of wind turbines, experienced a 500 percent growth in its wind business in 2005 due to the renewal of the wind production tax credit in 2004. On a unit production basis, wind is subsidized more than 10 times any other energy source, yet contributes least to our energy security. Further, as the amount of wind generation increases, negative grid stability impacts grow exponentially.

National Wind Watch has watched the recent surge in wind development throughout New York, Pennsylvania, Virginia, and elsewhere in the United States and the impacts of this development on rural communities. Town boards and local officials are ill-equipped to evaluate the true impacts of these facilities. At the State level, some form of RPS has already been put in place in 23 States. This translates into additional State pressure on the community to embrace the wind plant, quiet opposition, and degenerate the permit process.

In the face of this development, the September 2005 GAO Report titled "Impacts on Wildlife and Government Responsibilities for Regulating Developing and Protecting Wildlife" stated ". . . that the impact of wind power facilities on wildlife is more studied that other comparable infrastructure, such as communication towers, important gaps in the research remain. First, relatively few pre-construction monitoring studies have been conducted and made publicly available. It appears that many wind power facilities and geographic areas in the United States have not been studied at all." Where they have been studied (e.g. Altamont Pass in California) the studies find significant work to do to reduce continued and on-going decimation of wildlife, including endangered and protected species.

While requests for additional pre-construction studies may be made, the local communities often do not have the money to pay for original research at a site. In many cases, the research should not be confined to the limited hundreds of yards area where the turbines are located, but would involve a regional review to cover secondary impacts related to erosion, impacts to water quality, tourism and the economy, and bird migration patterns. In the absence of local funding, National Wind Watch has found multiple cases where wind companies have agreed to conduct such studies, but also assume authority over the parameters of the studies and, in so doing, predetermine the outcome.

Continued installation of wind turbines throughout our rural and mountainous landscapes without scientific, impartial review of the impacts of this industrialization would have devastating effects of some of the most precious ecosystems in the world. After decades of government-subsidized research and implementation, it is time for the wind industry to no longer be treated as an "infant industry". Rather, it is time for the industry to start paying for much of its way, consistent with the maturation of the technology. Any money now should go to research, once and for all, the impacts of these massive turbines on our wildlife, open spaces, property values, health and safety of residents living in the vicinity of turbines, and the quality of rural life.

National Wind Watch respectfully requests that you deny further funding for wind energy research and development, and direct this funding to the detrimental impacts and mitigation techniques of wind turbines. We also recommend the National Renewable Energy Lab NOT be in charge of such analysis but only allowed to participate.

PREPARED STATEMENT OF SOUTHEASTERN FEDERAL POWER CUSTOMERS, INC.

Mr. Chairman and members of the subcommittee, on behalf of the Southeastern Federal Power Customers ("SeFPC" or "Customers"), I am pleased to provide testimony in reference to the administration's fiscal year 2007 budget request for the Southeastern Power Administration ("SEPA") and the U.S. Army Corps of Engineers ("Corps"). SEPA and the Corps operate the Federal Power Program in the Southeast which benefits millions of electric ratepayers throughout the States in the South that are served by SEPA Power. I will elaborate in my testimony on each of the following items of interest to the SeFPC: supporting the administration's request for $34.4 million for Purchased Power and Wheeling activities and $5.7 million in program direction for SEPA; funding of construction and operations and maintenance needs related to Corps projects that provide power marketed by SEPA; and lastly our grave concerns regarding the administration's proposed Agency Rate Change provision.

SEPA purchases, transmits, and markets the power generated at Federal reservoirs to municipal systems, rural electric cooperatives, and other wholesale customers throughout the Southeast. The SeFPC has enjoyed a long and successful relationship with SEPA that has greatly benefited over 6 million ultimate retail cus-

tomers that are SeFPC members. As the subcommittee is aware SEPA markets the energy and capacity that is generated from the Federal reservoir projects in the Southeast. The SeFPC represents some 238 rural cooperatives and municipally-owned electric systems in the States of Alabama, Georgia, Mississippi, Kentucky, North Carolina, South Carolina, Florida, and Virginia, which purchase power from SEPA.

In some cases, SEPA supplies as much as 25 percent of the power and 10 percent of the energy needs of SeFPC customers.

SUPPORTING THE ADMINISTRATION'S REQUEST FOR THE SEPA PROGRAM

The administration's fiscal year 2007 budget proposes to appropriate $34.4 million for Purchased Power and Wheeling ("PPW") activities and $5.7 million for program direction. Because the funds appropriated for these programs are returned to the Treasury through rate payments made by SeFPC members in the same year in which the appropriations are spent, these programs have a neutral impact on the U.S. Treasury. All of these funds will be returned to the Treasury in 2007. We thank the subcommittee for following the administration's recommended funding levels last year and once again, encourage the subcommittee to follow the administration's proposal for SEPA's program direction and PPW funding levels this year.

CORPS PROJECTS PROVIDE THE POWER MARKETED BY SEPA

The SeFPC membership is dedicated to providing reliable and economic power for its consumers. We therefore are concerned with the lack of specific information in Operations and Maintenance ("O&M") funding proposed in the President's fiscal year 2007 budget request.

This year the Corps' fiscal year 2007 Civil Works budget included a new layout for Operations and Maintenance funding. Historically, project funding was divided by State with specific funding amounts given to each project listed; however, this year O&M projects are categorized by Water Resource Regions and there are no specific funds cited for those projects mentioned. We are deeply concerned with the lack of specific information available on the requested O&M funds. As it stands now, over half of the hydroelectric generating facilities operated and maintained by the SAD in the SEPA Georgia-Alabama-South Carolina ("GA-AL-SC") System are slated to receive "minimal operations and maintenance" funding within the President's fiscal year 2007 budget request.

The Jim Woodruff Lock and Dam project within the Jim Woodruff System and the Cordell Hull Dam & Reservoir in the Cumberland System are both mentioned as projects needing minimal O&M funding, as well. We urge Congress to seek more specific information from the Corps on how much they propose to spend on O&M activities at each site. Until we know what the specific dollar amounts are and can define the actual amount referred to as "minimal" by the Corps, we, and members of Congress, can not be confident that significant infrastructure failures may occur due to insufficient O&M funding.

The age of many of the hydroelectric generating facilities operated and maintained by the Corps in SEPA's service area are nearly 50 years old. Major rehabilitations of generating units are critical if projects of this age are to continue in service. It is important to note that when a generating unit becomes inoperable, SEPA may be forced to pursue the purchase of expensive replacement power. This could result in a reduction of energy provided to customers, forcing the SeFPC members to purchase expensive energy elsewhere. Thus, we are pleased to see the Wolf Creek, KY project in the Cumberland System scheduled to receive $31 million in construction funds for dam safety purposes within the President's fiscal year 2007 budget; however the GA-AL-SC System, as a whole, will suffer due to significant decreases in requested construction dollars. Within the Kerr-Philpott System of projects, we also understand that rehabilitation work on the turbines and generators at the Kerr project has been threatened due to a lack of funding. However, this has not been a result of SEPA failing to collect sufficient funds in the rates. In fact, SEPA has collected over $240 million in rates for Corps repairs that has not been provided to the Corps.

AGENCY RATE CHANGE PROVISION

The SeFPC is concerned about a proposal within the President's fiscal year 2007 budget that, if not stopped, would impose administratively a higher level interest rate on new investment allocated to hydropower production. This proposal would raise rates with no apparent benefit to the hydropower customer; it is simply a back-door tax on the ultimate consumers of power marketed by SEPA. This proposal to increase interest rates to the "agency rate" level has emerged with virtually no

public discussion. Congress should provide much more active oversight over the Corps' activities due to the magnitude of the proposed change and the precedent that could result from it.

The PMAs are the rate-making agencies charged with marketing electricity from Federal hydroelectric facilities operated by the Corps and the Bureau of Reclamation ("Bureau"). In the Southeast, when the Corps makes an investment in a hydroelectric facility, SEPA must recover the cost of that investment in the rates charged to its customers. For a half century, the PMAs have set interest rates either following explicit instructions from Congress or by charging a rate that collects the Federal Government's cost of appropriated dollars.

Now, the administration's budget seeks to increase the interest rate charged on all new investments at projects whose interest rate is not set by law. This "agency rate" is higher than the current interest rate paid by SEPA. This "agency rate" reflects the interest cost to loan needed funds to government corporations. However, SEPA, the Southwestern Power Administration ("SWPA") and Western Area Power Administration ("WAPA") are not government corporations and do not borrow funds from the U.S. Treasury. As I have stated before, their rates are set to recover the appropriations established by Congress for the investment in the hydro-electric facilities and for costs to operate these projects.

We understand that the administration has suggested that the government corporation rate is more appropriate for the PMAs because of the risk of default. This argument simply ignores the statutory authority under which the PMAs operate and long-standing history of repaying the Federal investment in these projects. SEPA must collect all of the costs of generating hydropower at Federal facilities in the Southeast.

By law (the Flood Control Act of 1944), SEPA must recover all of the costs of producing power. Rate schedules are developed by SEPA after a notice and comment period and submitted to the Secretary of the Department of Energy for further review and implementation on an interim basis. Once the Secretary approves the rates on an interim basis, the Federal Energy Regulatory Commission ("FERC") has the responsibility to confirm on a final basis the rate schedule developed by SEPA. SEPA, the Secretary of the Department of Energy, and FERC must set a rate that by law recovers the Federal taxpayer's investment in the Federal Power Program. If an existing rate is insufficient to meet repayment obligations, SEPA must file a new rate and include appropriate increases to ensure all repayment obligations are met. In other words, there is a multi-layered review process and legal obligation that ensures that the PMAs will not default on outstanding obligations.

With no real threat to PMA defaults on outstanding debt, the subcommittee is left with little substantive reason why the interest rate on new investment should be increased. As the proposed change will only serve as a revenue enhancement measure and provide no additional benefits for PMA customers, the members of the SeFPC wholeheartedly encourage members of the Energy and Water Development Subcommittee and full Appropriations Committee to stop the administration from implementing this budget proposal.

We appreciate the opportunity to present our views and will gladly respond to any inquiries that the subcommittee may have.

PREPARED STATEMENT OF THE CASCADE COMMUNITY PARTNERSHIP

Ladies and gentlemen of the committee, thank you for the opportunity to submit written testimony regarding the U.S. Department of Energy's fiscal year 2007 budget as it pertains to geothermal research funding.

I represent a group of citizens in Cascade, Idaho—the Cascade Community Partnership, supported by the Valley County Board of County Commissioners, the City of Cascade, the Cascade School District and the Cascade Medical Center Hospital District—who are working toward a fairly lofty goal, but given the current state of petroleum supply, demand and cost in the world today, a fairly sensible one, that of achieving some level of energy self-sufficiency here in Valley County.

We, as a group, are somewhat chagrined that, given the current world situation regarding oil and energy in general, research funding for what is a viable form of alternative energy in the West—geothermal—would be zeroed out in the U.S. Department of Energy's budget for the coming fiscal year. I should add here, that the proposal outlined below has very strong support from all of the principals involved, and strong bi-partisan support at that.

We are in the midst of several studies involving Chevron Energy Solutions and IdaTherm LLC, an Idaho geothermal energy development company, and expect final reports within the next couple of months. We will then have additional seismic sur-

veying and geochemical testing to conduct in order to further refine the information in those reports. However, preliminary indications are that we may have the potential for a geothermal resource in Valley County, Idaho, that could generate up to 100 megawatts of electricity. While that is a small amount of energy in the global picture, it is a project that could inspire other communities with similar resources to pursue the same type of development. Enough of those pieces could add up to something very, very significant, something that could help this Nation wean itself from the oil spigot. Beyond energy production, the partnership is also finalizing a strategic plan that includes use of geothermal water for a heating district, to heat greenhouses and conduct aquaculture, among other uses, all of which should benefit our rural economy.

We have uncovered a number of potential sources of funding for capital construction, and for further research to narrow down our potential drilling site. But, the big gap in getting any such project off the ground is the risky business of drilling an exploratory geothermal well. The DOE funding for such activities in the past has been a great contributor to geothermal exploration.

We would urge that you, members of the Senate Subcommittee on Energy and Water, find a way to restore some of that funding, specifically that relating to the drilling of geothermal exploratory wells, which in recent years has amounted to about $4 million every budget cycle. But, we would also urge that the funding be restored with a new innovative approach.

Another member of the partnership's steering committee and I recently met in Boise, Idaho, with representatives of IcelandAmericaEnergy, a Reykavik-based firm that is interested in exporting its vast geothermal expertise to other parts of the world. We had a very fruitful discussion, perhaps the most important aspect of which was the exchange concerning the geothermal exploration fund that was established in Iceland in the early 1970's to encourage geothermal exploration. It is essentially a revolving loan fund that is tapped to provide matching funds for other private/public sources of money for exploratory drilling. Comparing the geothermal picture in Iceland with that in the Western United States is, to a great extent, a case of apples and oranges, but the basic concept of a self-sustaining revolving loan fund, with incentives to encourage continued exploration, seems valid.

With restoration of funds for geothermal research, we would encourage you to direct that it be used as "seed money" to establish a self-sustaining revolving loan fund for geothermal exploration. As for the administration of the fund, we would suggest the DOE's geothermal energy division, or perhaps the Intermountain West Geothermal Consortium based at Boise State University, as two possibilities. There is certainly the expertise in either program to screen applications to make sure that applicants have done their "due diligence," the homework and preliminary work necessary to ensure that the fund's resources are indeed going toward drilling an exploratory hole that has at least a 50/50 chance of success. Should the fund work as a number of us believe it can, there will be no need to approach Congress in the future with requests for additional funding for geothermal exploratory well drilling.

Attached to this testimony is more detail about the proposed loan fund in the form of an "explainer" that includes some assumptions concerning risk and probabilities-numbers that we're told are valid in the geothermal industry in the United States—along with a sample spreadsheet about how the fund might operate. A number of much better financial minds than mine have examined this and agree that it's an approach that has merit.

We, as a community, thank you for your time and serious consideration of this matter. If you have further questions about my written testimony or proposal, please don't hesitate to contact us. Thank you again for your time and consideration.

REVOLVING LOAN FUND PROPOSAL

Assumptions

That geothermal wells are drilled at a success rate of 50 percent—some experts in the field believe 60 percent is achievable. In Iceland, the rate is 90 percent, but that is in Iceland. It is expected that success rate will increase as more is learned about subterranean resource.

That private industry (partners) will be willing to participate in the program as a matching partner. Discussions, and an already existing track record pertaining to the grant program, indicate that willingness may exist.

That a proven geothermal resource is worth more than just the cost of drilling a well.

That projects proposed for funding under the program would be heavily scrutinized—that the science and research leading up to site selection has been done, been done well, and then reviewed by knowledgeable experts.

Basic Proposal

Money presently granted by Congress for exploratory geothermal well drilling through the United States. Department of Energy—money that has, in the past, been granted to geothermal explorers—would be converted to a revolving loan fund.

If successful, the borrower would repay the fund at twice the amount that was borrowed.

If unsuccessful, the loan would be forgiven, and the private partner would also be reimbursed out of the loan fund an amount equal to 50 percent of that private match. This step is to encourage continued geothermal exploration. Because of that feature, the fund would actually be paying for 75 percent of the cost of drilling an unsuccessful exploratory geothermal well.

At this point, there is nothing in the pro forma spreadsheet to cover costs of administering the program, nor money included there to cover the costs of reviewing the data developed by the loan applicant.

However, in reviewing the spreadsheet, it seems that there should be money available for those purposes.

For the past few years, DOE has been budgeted $4 million each funding cycle for exploratory drilling.

Revolving loan fund	Loans	If unsuccessful, cost [1]	If successful, repayment [2]	Fund balance
Beginning fund balance				$4,000,000
First project	$400,000	$600,000		3,400,000
Second project	350,000	525,000		2,875,000
Third project	400,000		$800,000	3,675,000
Fourth project	300,000	450,000		3,225,000
Fifth project	500,000		1,000,000	4,225,000
Sixth project	400,000	600,000		3,625,000
Seventh project	350,000		700,000	4,325,000
Eighth project	400,000	600,000		3,725,000
Ninth project	500,000		1,000,000	4,725,000
Tenth project	300,000	450,000		4,275,000
Eleventh project	400,000	600,000		3,675,000
Twelfth project	350,000		700,000	4,375,000
Thirteenth project	500,000	750,000		3,625,000
Fourteenth project	400,000		800,000	4,425,000
Fifthteenth project	350,000	525,000		3,900,000
Sixteenth project	400,000		800,000	4,700,000
Seventeenth project	500,000	750,000		3,950,000
Eighteenth project	400,000	600,000		3,350,000
Nineteenth project	400,000		800,000	4,150,000
Twentieth project	500,000		1,000,000	5,150,000

[1] In unsuccessful ventures, cost to fund is total of loaned amount plus 50 percent of the private sector/local match is repaid that investor.
[2] In successful ventures, the loan is repaid at 200 percent (can be repaid over time at additional interest).

And on and on . . .

—Of course, this simple spreadsheet doesn't factor in costs associated with administration of the fund, nor costs for peer review of data.

—The above spreadsheet also shows a less than 50 percent success rate, with 9 successes to 11 failures.

—Depending on timing, it appears the fund could also absorb a few more failures.

Prepared Statement of the Interstate Oil and Gas Compact Commission

Chairman Domenici and members of the subcommittee, thank you for the opportunity to submit testimony on the appropriation to the Department of Energy's Office of Fossil Energy. My testimony represents the views of the governors of 30 member States of the Interstate Oil and Gas Compact Commission (IOGCC). These States account for virtually all of the onshore domestic production of crude oil and natural gas. As stewards of these resources, the States strongly support restoring the appropriation to, at the very least, the current budget level for research and development (R&D) for oil and natural gas projects administered by the Office of Fossil Energy. Taxpayers are very supportive of Federal investments in energy security, and there is no better investment than in R&D.

As I prepare this testimony we stand as a country very close to yet another "energy crisis." Crude oil prices reached more than $75 a barrel—a price level not experienced in our country's history. In addition, the prices of heating oil, natural gas

and gasoline also reached record highs. The U.S. domestic oil and natural gas industry today supplies about 40 percent of our Nation's demand for oil. The rest is imported—a number which is growing every year—making us more and more vulnerable to international crises and foreign economic manipulation. Our dependence on others for our energy security has never been greater.

One thing we can count on, however, is that domestic supplies of crude oil and natural gas are our best hedge against this vulnerability and increasing import dependency. Besides energy security there are a myriad of other reasons why domestic production is preferable to imports:

—Our domestic resources are produced under the world's most effective environmental protections, which were established and enforced by the States.

—Domestic resources create high-quality jobs here at home and provide the energy that powers our standard of living. Few realize that stripper oil wells (wells producing less than 10 barrels per day) account for about one-quarter of the lower 48 States' onshore domestic oil production and stripper gas wells (wells producing 60 Mcf per day or less) about 10 percent of onshore domestic gas production. This is a critical natural resource.

—Despite perceptions to the contrary, large qualities of oil and natural gas remain onshore the United States. These resources represent the most stable and secure energy available. These resources may exist in fields that have already been discovered and await a new technology that results in cost-effective recovery. Or they may lie in reservoirs yet undiscovered due only to a lack of technology appropriate for deeper horizons or greater geologic complexity. The bottom line is vast reserves remain untapped. While recovery rates have increased dramatically in the past 50 years and exciting new tools have been developed for exploration, still more can be done to reach the full production potential for reservoirs.

Many experts believe R&D is the most important factor in maximizing the availability and utilization of petroleum resources, especially domestic reserves.

Several years ago, the Task Force on Strategic Energy Research and Development noted that, "There is growing evidence of a brewing 'R&D crisis' in the United States—the result of cutbacks and refocusing in private-sector R&D and reductions in Federal R&D."

A more recent report being compiled this month by the IOGCC confirms the declining trend in R&D expenditures while the country is experiencing a corresponding increase in reliance on imports. Major oil companies once poured millions into research and development. Today, however, their focus has largely moved overseas and offshore. Eighty-five percent of the wells in the United States are drilled by independent oil and natural gas producers (producing roughly 40 percent of the domestic oil and 65 percent of the domestic natural gas). Such smaller independents lack both the resources and infrastructure for significant R&D.

The IOGCC report concluded that "[w]hen private R&D is compared to Federal expenditures, the outlook is more bleak. Private spending is substantiated . . . but Federal spending remains disproportionately small compared to the relative importance of oil and gas to U.S. energy requirements."

The decline of Federal and private support for oil and gas research is well documented. The reasoning for cutting government support seems steeped in politics and a failure to understand the importance of Federal R&D to our domestic oil and gas industry and our energy security. However, this is a new era of uncertainty in our energy security that requires a fresh look at spending priorities.

At present, our own economic recovery continues to be questioned, and an energy shortage would certainly slow the comeback. Middle East energy supplies are at considerable risk with war and internal conflict that remains a constant threat. The recent anti-U.S. rhetoric from Venezuela has caused companies to back away from future oil and gas investments in this country, creating yet more uncertainties in a major country supplying petroleum to the United States.

If the United States is to maintain its ability to produce its domestic supplies of oil and natural gas, Federal expenditures on R&D must fill some of the void left by private industry. Federal funding on oil and natural gas must increase if the United States is to maintain its ability to produce the domestic oil and natural gas resources our country so desperately needs. But instead of filling the void and expanding Federal expenditure on R&D, the administration's budget for fiscal year 2007 eliminates oil and gas research.

In fact, the proposed budget calls for cutting the petroleum technology R&D program at the very moment that our country could benefit the most from technology breakthroughs that can be applied to our own resources.

This is still so much promising work the taxpayers of this country support: new methods of drilling that reduce impacts to the environment; new materials that

allow better, faster drilling; new chemicals and biological tools that increase production; better uses of renewables in the production of fossil fuels; minimizing waste; and creating high quality jobs.

There have been many success stories from the DOE oil and gas research program. One recent, striking example of how DOE makes a real contribution to advances in environmental protection, energy production and innovation comes from a DOE-IOGCC project in California. Under DOE's Preferred Upstream Management Practices (PUMP) program, the project is proving that unmarketable gas can be used on site to provide power to oil wells previously idle. At the same time, the project is meeting the strict air quality standards in the Los Angeles area. DOE funding for this project was matched 100 percent by other partners, which enabled the government to double its R&D investment. Every government program investment should be as effective.

This is but one example of DOE helping provide leadership in demonstrating a technology that may have much broader implications for operators in 30 other oil- and gas-producing States who now won't have to reinvent the well in order to satisfy environmental restrictions and the urgent need for domestic energy.

Through careful regulation, IOGCC member States have helped maximize production and minimize wasteful practices that can lead to the premature abandonment of reservoirs. States have also developed innovative approaches to deal with temporarily idled wells, created incentives that maximize production and supported R&D that improve recovery rates and lower finding costs.

Going forward, the IOGCC believes that a balanced and effective energy policy must encompass a number of fundamental principles, with R&D serving as a centerpiece in each. Other guiding principles include conservation of resources both in the producing and consuming sectors, encouraging domestic production to create economic growth and stability, increasing access to public lands for responsible development and prolonging production from wells at economic risk.

We strongly encourage the subcommittee's support of increased funding in oil and gas research as a first step in implementing an energy plan that makes sense for our country's future.

PREPARED STATEMENT OF THE SOLAR ENERGY INDUSTRIES ASSOCIATION

INTRODUCTION

The Solar Energy Industries Association (SEIA) appreciates this opportunity to offer written testimony regarding the solar energy research and development programs of the Department of Energy. SEIA is the national trade association of solar energy manufacturers, dealers, distributors, contractors, installers, architects, consultants, and marketers, working work to expand the use of solar technologies in the global marketplace.

SECURITY, PROSPERITY, ENVIRONMENTAL PROTECTION

We anticipate that the annual global growth rate of the photovoltaics market—30–50 percent—will continue to be the norm for many years into the future (though near-term silicon supply shortages will limit growth for the next year or two.) By 2015, PV will provide 5–10 GW of electric capacity (enough to power 1–2 million homes); avoid 10 million metric tons per year of CO_2 emissions; and employ 30,000 new workers. An additional 5–10 GW of concentrating solar power has been forecast for the American Southwest by the Western Governor's Association and several consultancy reports.

No other technology can match solar's environmental benefits, ability to reduce natural gas demand, high employment intensity, and high-tech manufacturing benefits. However, all of these aggressive deployment forecasts assume continued progress on the industry's technical challenges at a rate at least matching historical norms; and the current soaring growth of the industry means the United States must make substantial investments if it is to maintain this progress—and stay ahead of other nations.

THE GOAL

It now appears possible to have all solar technologies broadly competitive on a simple economic basis with their conventional fuel competition in the United States before 2015—with steady progress in certain high value markets leading up to that date. This target appears achievable both for photovoltaic electricity and solar thermal displacement of conventional energy (in the retail market) and concentrating solar power (in the wholesale market.)

SURGING GLOBAL INDUSTRY, TENUOUS U.S. LEADERSHIP

The last few years have been a period of exceptional growth and change for all sectors of the industry.

Since 2001, the global market for photovoltaics has quadrupled in size—from just under 400 megawatts of new annual capacity to more than 1,600 last year—approximately 412 billion worth of new product. Meanwhile the United States' global market share, formerly more than 50 percent, dipped below 10 percent.

2005 saw the first new construction of utility-scale Concentrating Solar Power plants in more than a decade.

Solar water heating experienced surging growth in the presence of unusually high prices for all conventional fuels.

Across all three technologies, surging demand and increasing economies of scale have driven a continuous feedback loop—each solar panel or power plant coming off of the line makes the next one cheaper. In fact, solar electricity costs on average less than half as much as it did in the 1990's—with the recent runup in natural gas prices, this is for the first time within striking distance of many retail electric rates.

Wall Street and Silicon Valley have taken notice, as well. Investment capital is surging into the industry at an unprecedented rate from publicly-traded stocks and venture capital funding; analysts estimate more than $1.5 billion of capital went into photovoltaic manufacturing expansion last year alone, and currently planned utility investments in concentrating solar power run to over $150 million per project.

CONTINUING INDUSTRY CHALLENGES

However, there are also severe challenges facing the industry as a whole.

The unprecedented growth of the photovoltaic sector has placed a severe strain on global supplies of silicon. (While as late as the 1990's, the global solar industry subsisted on waste and off-spec silicon from the microprocessor industry, it now demands more than half of global supply.) This has bottlenecked production and created a supply/demand imbalance that threatens the steady progress of cost reductions that have driven this industry within the realm of conventional "grid" electricity pricing. There is a real sector-wide need for improved manufacturing processes to relieve this bottleneck and continue price stability.

Responding to soaring conventional energy prices and policies enacted by the Energy Policy Act of 2005, Concentrating Solar Power manufacturers have effectively restarted this long-dormant industry "from scratch." They face considerable hurdles in scaling up their production by orders of magnitude and presenting investors with proven technologies sufficiently advanced to enable rapid deployment.

Solar water heating continues its history of slow, steady growth in the United States. However, the United States still employs this technology at less than one-tenth the rate of major European nations, and must move aggressively to develop novel lower-cost and more integrated systems if this technology is to realize its potential for near-term natural gas usage reduction.

In all cases, there is a continued need for Federal research—not to supplant the increasing role of private investment in expansion and research and development, but to provide a framework and pathway for bringing solar truly into the mainstream of U.S. energy resources, and provide broadly-used tools to continue rapid growth. Given the current energy situation, and the escalating concern of most Americans regarding energy issues, it is no longer acceptable merely to continue solar R&D programs at the current level.

PHOTOVOLTAICS—THE SOLAR AMERICA INITIATIVE

Accordingly, we strongly support the Solar America Initiative (SAI) as laid out in the administration's 2007 budget request. This budget proposes a new $139.47 million photovoltaic research program—an increase of more than 78 percent over fiscal year 2006. Additionally, the SAI represents a substantial shift in how DOE's solar programs administer and direct their research.

Where previous photovoltaics research focused on DOE laboratory R&D, with an emphasis on incremental cost reductions and potential future breakthroughs, we anticipate that the SAI will bring a more rigorously selective and goal-centered philosophy more focused on the near-term barriers to the real possibility of large scale solar deployment. In keeping with this philosophy, an increased emphasis on industry/university/DOE partnerships will leverage Federal funding through the increasing availability of private sector capital to the industry.

CONCENTRATING SOLAR POWER

The 2007 budget request also continues research into Concentrating Solar Power (CSP) devices at $8.9 million, and we are pleased to see the restoration of this Congressional priority in the initial request.

These utility scale, heat-driven solar generators currently provide hundreds of megawatts of clean electricity to the southwest, and the first new plants in more than a decade are now under construction, promising to bring enough electricity on line in the next several years for several thousand new homes—all without further straining our stressed supplies of conventional fuels. Current contracts extend to several hundreds of megawatts of installed capacity.

In large part, this is only possible due to continued improvements in price and performance that have been developed under DOE guidance. The initial large-scale commercial deployment of many technologies refined in the laboratory will inevitably require initial support from many of the researchers that made them possible, and we believe that this budget should prove adequate to ensure that this process occurs, smoothing the transition to multi-gigawatt commercial deployment over the 2006–2015 timeframe.

SOLAR HEATING AND LIGHTING

Unfortunately, the administration request would zero out this program item, an omission which we believe is not in line with the stated goal of the Solar America Initiative: "To accelerate widespread market acceptance of clean solar energy technologies across all U.S. market segments by 2015, reducing our dependence on natural gas and increasing our energy resources."

This resource is already cost-effective in many cases, and it could have truly significant impact on U.S. energy consumption if a serious deployment program were undertaken: Fewer than 123,000 residential water heaters consume the capacity of one LNG tanker per year, and if just 40,000 American households purchased solar water heating systems in the next 5 years, it would displace 5 million cubic feet of natural gas consumption.

In the past years, demand for solar thermal has grown substantially. However, there remain two principal barriers to the mass-market penetration:

—(1) *Cost*.—The DOE SH&L program, in partnership with industry, recently achieved a significant breakthrough by developing a new low-cost polymer-based solar water heater with a 50 percent cost reduction. Unfortunately, this cutting-edge technology will not be available for deployment in most areas of the country until DOE and NREL's expertise can be harnessed to resolve cold climate durability and system design issues.

—(2) *Perceived Reliability*.—The potential loss of SH&L program funding for the non-profit Solar Rating and Certification Corporation (SRCC), which has certified solar thermal collectors and systems for performance and quality since 1980, will severely diminish the impact of the new Federal tax credit for solar water heaters. SRCC certification is required for solar water heating systems to be eligible for the tax credit, so the loss of funding creates a bottleneck for the industry and consumers alike. It is also possible that de-funding SRCC could open the door for un-rated and un-certified systems to enter a tax credit-stimulated market—a repeat of the quality issues that plagued the industry in the 1970's.

Accordingly, we request that this program be continued at the $5 million dollar annual level.

CONCLUSIONS

In an era of highly increased concern regarding the United States' energy security, it is time to make a significant commitment to research and development of renewable energy sources. The administration's proposed budget is a first step in the right direction of substantially increased funding, and a more rigorous and results-driven approach to research, development, and deployment, for these extremely promising resources.

PREPARED STATEMENT OF PRATT & WHITNEY ROCKETDYNE, INC.

EXECUTIVE SUMMARY

America faces several complex and interrelated energy challenges. Three of the most pressing are: (1) excessive dependence on oil imports; (2) escalating energy

prices; and (3) increasing greenhouse gas emissions. Advanced technologies will be required to solve these problems.

Gasification can address all of these challenges. Gasification converts coal, either by itself or blended with biomass and combustible wastes, into syngas, a valuable mixture of hydrogen and carbon monoxide. Syngas can be used to produce electricity, synthetic liquid fuels (such as ultra-clean diesel fuel, gasoline, and ethanol), hydrogen, synthetic natural gas, and chemicals.

These products can all be produced with near-zero emissions, as gasification enables efficient sequestration of carbon dioxide. Gasification can also increase domestic oil and natural gas production, if byproduct carbon dioxide is used for enhanced recovery of oil and coal bed methane (natural gas). Synthetic and alternative fuels produced via gasification can be carbon-neutral when the feedstock is a mixture of coal and biomass, and when the coal-derived carbon dioxide is sequestered.

Recognizing the importance of gasification, the Department of Energy (DOE) is working with industry partners to develop a portfolio of advanced gasification technologies. Pratt & Whitney Rocketdyne (PWR), America's leading rocket engine company, is pleased to participate in this cooperative program. We are adapting rocket engine technologies to develop a compact gasification system that could significantly reduce plant cost and downtime, improve efficiency, and economically gasify all ranks of coal.

Advanced gasification technologies are strategically important to America's economic competitiveness and national security. However, projected DOE funding is inadequate for timely development of these technologies. We therefore respectfully request that the Senate take the following actions:

—Fully fund the President's fiscal year 2007 budget request of $54 million under the DOE "Advanced Integrated Gasification Combined Cycle" line item.

—Direct DOE to fund continued development of the PWR compact gasification system with at least $7 million in fiscal year 2007. (This project is identified in the President's budget request.)

—Request DOE to prepare a plan (with proposed budget) to expand development of advanced gasification technologies in fiscal year 2008 and future years.

BACKGROUND

There are currently 116 gasification plants in operation around the world. These plants produce electricity, synthetic natural gas, ultra-clean diesel fuel, hydrogen, fertilizer, chemicals, and many other products from abundant, low cost feedstock such as coal, biomass, and combustible wastes.

These plants are important—but they provide less than 1 percent of the world's energy. Widespread commercial application of the technology has been constrained by economic and technological factors. Existing gasification plants suffer from high capital cost, excessive downtime, and inability to economically gasify all ranks of coal and other available feedstock.

Significant technological advances are required to realize the full potential of gasification. With improved technologies, future gasification plants could produce a substantial fraction of America's electricity, gaseous fuels, and liquid transportation fuels from domestic resources, with near-zero emissions.

DOE ADVANCED GASIFICATION PROGRAM

The Department of Energy and its industry partners are currently developing new technologies that could dramatically reduce the cost of gasification and improve plant reliability and performance. Congress funds this work under the line item "Advanced Integrated Gasification Combined Cycle."

Pratt & Whitney Rocketdyne (PWR), a world-leading rocket engine company, is pleased to participate in this important work. We built the rocket engines that took Americans to the Moon, and brought them safely home. Today, PWR makes the liquid rocket engines that power the Space Shuttle, Delta and Atlas launch vehicles.

With DOE support, PWR is developing a compact gasification system using low-cost rocket engine technologies to reduce gasifier size, capital cost, and downtime, while improving performance, efficiency and feedstock flexibility. This is just one of several technologies supported by DOE under this line item. The four key projects are:

—Southern Company and KBR (Kellogg, Brown, and Root) are developing an advanced Transport Gasifier to reduce the cost of gasification.

—Air Products is developing an ITM (Ion Transport Membrane) air separation system to reduce the cost and improve the efficiency of producing pure oxygen from air.

—Research Triangle Institute (RTI) is developing an advanced, low-cost gas cleanup system, in collaboration with Eastman Chemical.
—PWR is developing the compact gasification system described above, in collaboration with GTI (Gas Technologies Institute) and EERC (Energy and Environmental Research Institute).

These are all potential high-payoff technologies. They are also complementary. For example, the PWR compact gasification system fully utilizes the benefits of Air Product's ITM air separation system and RTI's advanced gas cleanup system, while complementing Southern's Transport Gasifier by gasifying all ranks of coal.

These advanced gasification technologies, in combination with advanced gas turbines, could reduce the cost of Integrated Gasification Combined Cycle (IGCC) power plants from $1,600 per kilowatt today, to less than $1,300 per kilowatt, and improve plant efficiency to near 50 percent. If these goals are achieved, IGCC power plants could save U.S. electric power consumers up to $20 billion annually, reduce coal power plant emissions over 90 percent, and facilitate efficient carbon dioxide sequestration.

These technologies could also enable cost-competitive production of liquid transportation fuels, hydrogen, synthetic natural gas, and chemicals—all from abundant domestic fossil fuels (such as coal and petroleum coke) which can be blended with renewable resources (such as biomass wastes and purpose-grown biomass). Although it is difficult to estimate the cost savings achievable from synthetic and alternative fuels, the payoff could be huge: (1) reduced oil imports; (2) improved national security; (3) reduced air pollution and carbon dioxide emissions; (4) less volatile energy prices; and (5) sustainable economic growth.

The advanced gasification technologies funded by DOE feed into FutureGen and the Clean Coal Power Initiative (CCPI), and are essential to the success of these programs. As an example of this process, the Southern Company is currently scaling up its Transport Gasifier from pilot scale (at Wilsonville, Alabama) to commercial scale in a CCPI project in Orlando, Florida.

PWR GASIFICATION SYSTEM

The PWR compact gasification system uses rapid-mix rocket engine technology to achieve the following advantages over conventional gasification systems:
—90 percent reduction in gasifier size;
—50 percent lower capital cost;
—3–10 percent higher cold gas efficiency;
—50–90 percent reduction in downtime;
—Feedstock flexibility (potential to gasify all ranks of coal, either by themselves or blended with renewable biomass and combustible wastes);
—Product flexibility (economical production of multiple products, including electricity, hydrogen, liquid fuels, and chemicals);
—Low-cost hydrogen production and carbon dioxide sequestration.

With PWR gasification technology, Integrated Gasification Combined Cycle (IGCC) power plants will be able to produce electricity for about 4 cents per kilowatt-hour. Capital costs will be reduced by as much as $300 million for a 1,000 megawatt plant. This capital cost reduction, combined with improved plant availability, can save $1 billion during the first 15 years of operation of such a plant.

The PWR technology is also well-suited for production of hydrogen and sequestration of carbon dioxide, with an expected plant efficiency of about 70 percent and cost approximately $2.00 per thousand cubic feet. (This is equal to 80 cents per gallon of gasoline equivalent.) Low-cost hydrogen can replace natural gas as fuel for existing combined-cycle power plants and refineries. The resulting decrease in natural gas consumption and carbon dioxide emissions could be substantial. This technology can also provide low-cost, near-zero emission hydrogen for stationary fuel cells, and power the Hydrogen Economy when (and if) practical fuel cell vehicles are developed.

If the price of oil remains high, and if oil imports and global warming continue to be major issues, advanced technologies such as the PWR gasifier will be needed to produce affordable carbon-neutral synthetic fuels from non-petroleum resources. Combining the PWR gasification system with existing Fischer-Tropsch technology enables production of ultra-clean synthetic diesel fuel (and other alternative fuels) for less than the current price of crude oil.

Many industries in the United States are struggling with high natural gas cost, and are therefore interested in industrial gasification to produce syngas and electricity for industrial purposes. The compact, low-cost features of the PWR technology makes it well-suited for industrial gasification, especially when combined with other

advanced gasification technologies under development on the DOE program, such as Air Product's ITM air separation system.

PWR started development of the compact gasification system in late 2004, after a competitive procurement sponsored by the DOE. We are currently testing components and materials, and constructing a cold flow test facility at the Energy and Environmental Research Center (EERC) at the University of North Dakota. Testing at this facility will begin in late 2006. We have also defined a pilot plant, to be located at the Gas Technology Institute (GTI) in Des Plaines, Illinois.

FUNDING STATUS

The President's 2007 budget request includes funds for this project (as well as the 2006 budget). The steps necessary to complete development of the technology include: (1) constructing and operating the pilot plant at GTI; and (2) developing and testing the dry solids pump at EERC. The total government cost share for this entire project is about $30 million over 5 years, including sunk costs of $4 million. This is a cost-shared program, and PWR funds a portion of technology development, and all related commercialization activities.

In January 2006, the DOE conducted a peer review of our proposed plan to complete this program. The peer reviewers recommended continuation of the project. In parallel, DOE funded an independent contractor to evaluate the potential economic advantages of our gasification system, and their results confirmed the economic advantages of the PWR compact gasification system.

Nevertheless, in April 2006, DOE informed us that they do not plan to fund the pilot plant and dry solids pump, because DOE does not have adequate funds to develop a new gasification system. We understand that the administration and Congress are under immense pressure to reduce the budget deficit, and to fund other important priorities. However, we believe that this country can—and should—allocate the resources needed to address America's energy problems.

RECOMMENDATIONS

We urge the Senate to provide DOE with adequate resources to develop advanced gasification technologies. Specifically, we request the Senate to take the following actions:

—Fully fund the President's fiscal year 2007 budget request of $54 million under the DOE "Advanced Integrated Gasification Combined Cycle" line item.
—Direct DOE to fund continued development of the PWR compact gasification system with at least $7 million in fiscal year 2007. (This project is identified in the President's budget request.)
—Request DOE to prepare a plan (with proposed budget) to expand development of advanced gasification technologies in fiscal year 2008 and future years.

This expanded DOE Gasification Plan should include sufficient funding for: (1) timely completion of on-going advanced gasification projects; and, (2) new initiatives to enable cost-competitive production of synthetic and alternative transportation fuels, as well as electricity, with near-zero emissions.

SUMMARY OF BENEFITS

The benefits from widespread deployment of coal and biomass gasification are substantial for a broad range of constituents:

—America will benefit from enhanced energy security.
—The U.S. economy will benefit from domestically-produced, affordable energy supplies.
—Coal-producing regions, farm States, and forestry regions will benefit from sustainable, environmentally sound utilization of coal and biomass.
—Oil producing regions will benefit because carbon dioxide (produced as a byproduct of gasification) can be used for enhanced oil recovery.
—Refinery regions will benefit as gasification technology enables cost-competitive utilization of refinery wastes and other low-cost feedstock.
—Energy consumers will pay less for electricity, natural gas, and transportation fuels.
—All people on the planet will benefit from a clean environment and a stable climate.

These are clear and compelling reasons to develop and deploy advanced gasification technologies.

Thank you for giving us the opportunity to provide this testimony. With your leadership, America will transform today's energy challenges into tomorrow's opportunities.

LIST OF WITNESSES, COMMUNICATIONS, AND PREPARED STATEMENTS

Page

Alaska Energy Authority, Prepared Statement of the 413
Allard, Senator Wayne, U.S. Senator From Colorado:
  Prepared Statements of 4, 50, 105, 267
  Questions Submitted by 80, 187
  Statements of 4, 49, 104, 193, 267
Alliance to Save Energy, Prepared Statement of the 435
American:
  Association of Petroleum Geologists, Prepared Statement of the 429
  Chemical Society, Prepared Statement of the 492
  Forest & Paper Association, Prepared Statement of the 473
  Gas Association, Prepared Statement of the 476
  Geological Institute, Prepared Statement of the 450
  Iron & Steel Institute, Prepared Statement of the 467
  Public Power Association, Prepared Statement of the 432
  Rivers, Prepared Statement of 351
  Society:
    For Microbiology, Prepared Statement of the 408
    Of Plant Biologists, Prepared Statement of the 448
Arkansas River Basin Interstate Committee, Prepared Statement of the 300
Association of U.S. Petroleum Engineering Department Heads, Prepared Statement of the 425
Austin Energy, Prepared Statement of 478

Bardin, David J., Prepared Statement of 459
Biomass Energy Research Association, Prepared Statement of the 419
Board of Levee Commissioners for the Yazoo-Mississippi Delta, Prepared Statement of the 317
Bond, Senator Christopher S., U.S. Senator From Missouri:
  Question Submitted by 186
  Statements of 106, 191
Brooks, Hon. Linton F., Under Secretary for Nuclear Security, and Administrator, National Nuclear Security Administration, Department of Energy 241
  Prepared Statement of 246
  Statement of 244
Bureau of Economic Geology, The University of Texas at Austin, Prepared Statement of the 394

Calaveras County Water District, Prepared Statement of the 331
California State Coastal Conservancy, Prepared Statement of the 334
Cascade Community Partnership, Prepared Statement of the 507
Center for Advanced Separation Technologies, Virginia Polytechnic Institute and State University, Prepared Statement of the 455
Central:
  Arizona Water Conservation District, Prepared Statement of the 362
  Utah Water Conservancy District, Prepared Statement of the 365
City of:
  Arlington, Texas, Prepared Statement of the 340
  Flagstaff, Arizona, Prepared Statement of the 308
  Los Angeles Board of Harbor Commissioners and Port of Los Angeles, Prepared Statement of the 349
  San Marcos, Texas, Prepared Statement of the 321
  Santa Barbara, California, Prepared Statement of the 314

Page

City of—Continued
St. Helena, California, Prepared Statement of the 332
Stillwater, Minnesota, Prepared Statement of the 355
Clark County Regional Flood Control District, Prepared Statement of the 297
Coal Utilization Research Council, Prepared Statement of the 479
Coalition of Northeastern Governors, Prepared Statement of the 417
Cochran, Senator Thad, U.S. Senator From Mississippi:
Prepared Statements of 6, 108, 198
Questions Submitted by 33, 182
Colorado:
River:
Basin Salinity Control Forum, Prepared Statement of the 368
Commission of Nevada, Prepared Statement of the 376
Energy Distributors Association, Prepared Statement of the 380
Water Conservation District, Prepared Statement of the 360
Springs Utilities, Prepared Statement of 370
Water Congress, Prepared Statement of the 361
Craig, Senator Larry, U.S. Senator From Idaho:
Prepared Statement of 195
Statements of 2, 46
Cummins Inc., Prepared Statement of 398

D'Agostino, Thomas, Deputy Administrator for Defense Programs, National Nuclear Security Administration, Department of Energy 241
Dayton, Senator Mark, U.S. Senator From Minnesota, Question Submitted by 238
Denver Water, Prepared Statement of 364
Department of Petroleum and Geosystems Engineering, The University of Texas at Austin, Prepared Statement of the 503
Detroit Diesel Corporation, Prepared Statement of the 462
Distributed Energy Coalition, Prepared Statement of the 404
Domenici, Senator Pete V., U.S. Senator From New Mexico:
Opening Statements of 1, 89, 191
Prepared Statement of 197
Questions Submitted by 25, 75, 77, 152, 229, 275
Statements of 45, 100, 241
Donald, Admiral Kirkland, Deputy Administrator for Naval Reactors, National Nuclear Security Administration, Department of Energy 241
Dorgan, Senator Byron L., U.S. Senator From North Dakota, Questions Submitted by 76, 83
Duchesne County Water Conservancy District, Letter From the 372

Electric Drive Transportation Association, Prepared Statement of the 447
Energy Sciences Coalition, Prepared Statement of the 452
External Advisory Committee to the Department of Petroleum and Geosystems Engineering, University of Texas at Austin, Prepared Statement of the 485

Federation of American Societies for Experimental Biology, Prepared Statement of the 401
Feinstein, Senator Dianne, U.S. Senator From California, Questions Submitted by 86
Florida State University, Prepared Statement of 422
Fort Peck Assiniboine and Sioux Tribes and Dry Prairie Rural Water System, Prepared Statement of the 382
Four Corners Power Plant, Prepared Statement of the 361
FuelCell Energy, Inc., Prepared Statement of 412
Fusion Power Associates, Prepared Statement of 458

GE Energy Advanced Technology Operation, Prepared Statement of the 444
Garman, David K., Under Secretary of Energy for Energy, Science and Environment, Department of Energy 89
Prepared Statement of 110
Statement of 108
Gas Machinery Research Council, Prepared Statement of the 411
Geo-Energy Partners, Prepared Statement of 475
Geothermal Energy Association, Prepared Statement of the 470
Grand Valley Water Users' Association, Prepared Statement of the 367
Granite Falls, Minnesota, Prepared Statement of 353

Page

Great Basin Center for Geothermal Energy, University of Nevada, Reno, Prepared Statement of the 458

Hospital for Special Surgery, Prepared Statement of the 442

IBACOS, Inc., Prepared Statement of 496
Independent Petroleum Association of America, Prepared Statement of the 453
Interstate Oil and Gas Compact Commission, Prepared Statement of the 509

Jarrett, Jeffrey, Assistant Secretary for Fossil Energy, Department of Energy 89
Johnson, Senator Tim, U.S. Senator From South Dakota, Statement of 48

Keys, John W., III, Commissioner, Bureau of Reclamation, Department of the Interior 45
Prepared Statement of 60
Summary Statement of 58
Kovscek, Anthony R., Prepared Statement of 397

Landrieu, Senator Mary L., U.S. Senator From Louisiana, Prepared Statement of 194
Limbaugh, Mark, Assistant Secretary for Water and Science, Department of the Interior 45
Prepared Statement of 52
Statement of 50

McConnell, Senator Mitch, U.S. Senator From Kentucky, Questions Submitted by 188
Metropolitan Water:
District of Southern California, Prepared Statement of the 372
Reclamation District of Greater Chicago, Prepared Statement of the 336
Mid-West Electric Consumers Association, Inc., Prepared Statement of the 441
Murray, Senator Patty, U.S. Senator From Washington, Statements of..... 5, 103, 196

Napa County Flood Control and Water Conservation District, Prepared Statement of the 339
National:
Association:
For State Community Services Programs, Prepared Statement of the 414
Of State Energy Officials, Prepared Statement of the 438
Coalition for Food and Agricultural Research, Prepared Statement of the 502
Community Action Foundation, Prepared Statement of the 488
Hydrogen Association, Prepared Statement of the 490
Mining Association, Prepared Statement of the 486
Research Center for Coal and Energy, West Virginia University, Prepared Statement of the 493
Wind Watch, Inc., Prepared Statement of 504
New Mexico Interstate Stream Commission, Prepared Statement of the 374
Northern Colorado Water Conservancy District, Letter From the 364
Nuclear Energy Institute, Prepared Statement of the 482

Oglala Sioux Rural Water Supply System, Prepared Statement of the 387
Orbach, Raymond L., Ph.D., Director, Office of Science, Department of Energy:
Prepared Statement of 119
Statement of 117
Ouachita River Valley Association, Prepared Statement of the 325

Paul, Jerry, Principal Deputy Administrator, Nuclear Nonproliferation Activities, National Nuclear Security Administration, Department of Energy 241
Perkins County Rural Water System, Inc., Prepared Statement of the 367
Pratt & Whitney Rocketdyne, Inc., Prepared Statement of 513
Public Service Company of New Mexico, Prepared Statement of the 362
Pueblo Board of Water Works, Prepared Statement of the 365

Red River Valley Association, Prepared Statements of the..... 327, 376
Reid, Senator Harry, U.S. Senator From Nevada:
Prepared Statement of 92

Page

Reid, Senator Harry, U.S. Senator From Nevada—Continued
Questions Submitted by 34
Statement of 89
Supplemental Statement of 94
Rispoli, James, Assistant Secretary of Energy for Environmental Management, Department of Energy 89
Riverside County Flood Control and Water Conservation District, Prepared Statement of the 315

Sage Electrochromics, Inc., Prepared Statement of 499
San Juan Water Commission, Prepared Statement of the 361
Santa Clara Valley Water District, Prepared Statements of the 342, 378
Sell, Hon. Clay, Deputy Secretary, Department of Energy 1
Prepared Statement of 11
Statement of 7
Society of Nuclear Medicine, Prepared Statement of the 431
Solar Energy Industries Association, Prepared Statement of the 511
Southeastern Federal Power Customers, Inc., Prepared Statement of 505
Southern Company, Prepared Statement of the 464
Southwestern Water Conservation District, Prepared Statement of the 366
Specter, Senator Arlen, U.S. Senator From Pennsylvania, Questions Submitted by 237
State:
Engineer's Office, State of Wyoming, Letter From the 370
Of Wyoming, Prepared Statement of the 366
Teachers' Retirement System, State of California, Prepared Statement of the 406
Strock, Lieutenant General Carl A., Chief of Engineers, Corps of Engineers—Civil, Department of the Army, Department of Defense—Civil:
Prepared Statement of 210
Statement of 209

Tennessee-Tombigbee Waterway Development Authority, Prepared Statement of the 309
The Nature Conservancy, Prepared Statement of 322
Three Affiliated Tribes, Prepared Statement of the 385
Tri-County Water Conservancy District, Prepared Statement of the 365

UF-DOE High Temperature Electrochemistry Center, University of Florida, Prepared Statement of the 416
US Fuel Cell Council, Prepared Statement of the 468
USA Rice Federation, Prepared Statement of the 320
United States Advanced Ceramics Association, Prepared Statement of the 427
University Corporation for Atmospheric Research, Prepared Statement of the 423
Upper:
Gunnison River Water Conservancy District, Prepared Statement of the 361
Mississippi River Basin Association (UMRBA), Prepared Statement of the 311

Ventura Port District, Prepared Statement of the 299

Western Coalition of Arid States, Prepared Statements of the 358, 392
Woodley, John Paul, Jr., Assistant Secretary of the Army (Civil Works), Corps of Engineers—Civil, Department of the Army, Department of Defense—Civil 191
Prepared Statement 200
Statement of 198
Wyoming Water Association, Letter From the 359

SUBJECT INDEX

DEPARTMENT OF DEFENSE—CIVIL

DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS—CIVIL

Page

Additional Committee Questions 229
Civil Works:
  Backlog 211
  Program:
    Areas 203
    Improvements 201
Construction 203
Continuing Contracts 236
  And Reprogramming 234
Drought 231
Emergency Supplemental Appropriations 200
Hopper Dredge McFarland 237
Katrina 231
Major Issues by Appropriation Account 197
Overview of Fiscal Year 2007 Army Civil Works Budget 200
Performance-based Budgeting 197, 200
Powder River Basin Expansion Project 238
President's Management Agenda 205
Project Suspensions 197
Regulatory Issues in New Mexico 229
Reprogramming 237
Studies and Design 202
Summary of Fiscal Year 2007 Program Budget 210
Value of the Civil Works Program to the Nation's Economy and Defense 212

DEPARTMENT OF ENERGY

Accelerated Cleanup—Change in Course 173, 178
Additional Committee Questions 24, 152
Advanced Burner Reactors 27
Advancing America's Economic and Energy Security 111
American Centrifuge:
  Program—USEC 162
  Project 168
Barter of Uranium 162
Biomass 165
Clean Coal Power Initiative 159
  Use of Carryover Balances 160
Cleanup Delays at K–25 178
Coal Research 116
Consolidation of Nuclear Material in the Complex 176
Construction of New Nuclear Power Plants 33
Contradictions to Other Studies And Assessments 97
DOE—Collaborative R&D 32
Department's GNEP Technology Objectives 16
Economics 34
Ensuring a Clean Environment 113
Environmental/NEPA 42

Page
Experimental Program to Stimulate Competitive Research 157
Fast Reactor Record and Safety 38
Fossil Energy Budget 160
GAO Report on Total Environmental Liabilities 179
Genomes to Life Program 152
Global:
Nuclear Energy Partnership (GNEP) 160
Budget Specifics 25
Engineering Demonstration 31
Nonproliferation 27
Proliferation:
Controls 25
Risks 18
Regulation 29
Risk Liability Protection 28
Hanford Cleanup—Favorite Among Equals 169, 173
Hurricane Katrina Disaster Recovery 166
Hydrogen 161
And Fuel Cell Program 165
Competitiveness 164
Manufacturing 165
Implementation of the Energy Policy Act 158
Improving Management at the Department of Energy 115
Independently Financed Facilities 156
India's inclusion in ITER 157
Integrated Interim Storage/Reprocessing 35
Interim Storage 31
And Reprocessing 181
International:
Competitiveness 100
Concerns 39
Interest in Enrichment Services 19
Linear Collider 155
Iran—Pursuit of a Complete Fuel Cycle 27
Joint Dark Energy Mission 154
Katrina—EPAct 166
Legislative Reforms 30
Linear-No-Threshold Standard 153
Loan:
Guarantee 183
Guarantees 116
Los Alamos:
National Lab 171, 175
Neutron Science Center 153
Mixed Oxide (MOX) Program 28
Cost Increase 21
National Nuclear Security Administration and State Department Participation in GNEP 21
Next Generation Nuclear Plant (NGNP) 40, 162
Nuclear Power:
R&D 158
For Transportation Fuels 29
2010 33
OMB Rationale 98
Off-Shore Wind Energy Development 167
Office of Science—20-Year Plan 155
Past Reprocessing Record 37
Photovoltaic Energy Commercialization Program 167
Proliferation Concerns 38
Providing Reliable, Clean Electric Power 95
Public Disclosure 42
Rare Isotope Accelerator 157
Reclassifying Waste at Hanford, Washington 169, 176
Recycling Spent Fuel Technology 14
Regarding the Termination of the Geothermal Energy Program 94
Reliable Fuel Supply 32
Reprocessing in Europe (Traditional Purex Reprocessing) 40
Risk Insurance—EPAct 2005 28

Page

Royalty Changes 99
Savannah River Site—Seismic Regulations 173, 177
Science and Energy Research 153
Solar America Initiative 164
Spent Fuel Recycling Plan 36
Standby Support for Nuclear Power Plants 157
Strategic Petroleum Reserves 166
Tax Incentives 99
Technology Transfer Coordinator 156
Timing 40
Transportation Fuels 23, 24
U.S. Mixed Oxide Facility Costs 22, 23
UREX Construction Options 26
UREX+ Recycling Process 26
USGS Resource Assessment 99
University R&D Program 29
Uranium:
  Inventory 163
  Mining 163
  Supply 162
Vehicle Programs 184
WERC/DOE Cooperative Agreement 178
Waste 37
  Conundrum 30
  Treatment Plan Seismic Regulation 172, 177
Weatherization Program 166
Wind Energy 163
Yucca Mountain 33
  Capacity 182
  Funding 179
  License Application 181
  Options 30
  Program Status 180
  Repository Operations 182
  Requirements 180

NATIONAL NUCLEAR SECURITY ADMINISTRATION

Additional Committee Questions 274
Balanced National Program—NIF at All Cost 282
Changes in the Nuclear Weapons Complex 267
Complex of the Future 278
Defense Nuclear Facilities Safety Board 279
  Active Confinement Ventilation 286
Fiscal Year 2007 Budget:
  Request by Program 250
  Tables 257
Global Nuclear Energy Partnership (GNEP) 273, 280
Laboratory Directed Research and Development 295, 296
Los Alamos National Laboratory (LANL) 273
  New Contract Costs 289
Management Issues 257
National Nuclear Security Administration (NNSA):
  Appropriation and Program Summary Tables, Out-year Appropriation Summary Tables 257
  Management Oversight 280
  Vacancies 287
National Ignition Facility 266
  Budget 277
  Costs and Funding 275
  Plans 285
Nuclear Materials 270
Plutonium Disposition 263
Radioactive Sources 293
Reliable Replacement Warhead—Agent for Change 286
Russian Highly Enriched Uranium Deal 291
Secretary of Energy Advisory Board Related Questions 284
Special Nuclear Material Security 281

Page

Status of MOX 292
"Z" 5-Year Plan 282

OFFICE OF SCIENCE

Alternate Sources of Energy 147
Carbon Sequestration 141
Coal Research and FutureGen 141
Fiscal Year 2007 Science Priorities 121
Gasifier Technology 145, 146
Hydrogen Powered Fuel Cells 150
International Linear Collider 148
Los Alamos Neutron Science Center 147
National Renewable Energy Laboratory 136
Organization 124
PNNL 300 Area 138
Program Objectives and Performance 124
Rocky Flats:
    Litigation 137
        Claims 146
    Mineral Rights 137, 146
Science:
    Accomplishments 122
    Programs 125
Waste Treatment Plant 138
Yucca Mountain License Application 151

DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

Additional Committee Questions 75
Addressing Other Departmental Changes 56
Animas-La Plata 80
Budget:
    And Performance Integration 64
    Overview 53
Bureau of Reclamation's Mission 82
California Bay-Delta (CALFED) 63
    Storage Studies 86
    Water Use Efficiency Projects 87
Central Valley Project Restoration Fund 63
Dam Safety and Aging Infrastructures 68
Departmental Programmatic Highlights 53
Desalination and:
    Advanced Water Treatment Technologies 78
    Water Treatment Technologies 71
Drought 75
Energy Development 56
Environmental Water Account 86
Everglades 53
Fiscal Year 2007:
    Budget Request for the Bureau of Reclamation 59
    Planned Activities 64
Funding for Friant—NRDC Settlement 86
Highlights of the Fiscal Year 2007 Budget Request 59
    For the Bureau of Reclamation 51
Jackson Gulch Reservoir 81
Klamath River Basin 55
Lower Tuscan Aquifer Water Supply Investigation 87
National Academy of Sciences Study 58
Operations and Maintenance 82
Overall BOR Funding 83
Policy and Administration 62
President's Management Agenda 63
Rehabilitation 82
Repayment Contracts 80, 83
Rural Water 84

Page

Safety of Dams 81
Title XVI Water Reclamation and Reuse 79
Tularosa and Hurricane Relief Efforts 72
2005 Hurricanes 53
Water: .....
And Related Resources 60
Recycling Projects and Title XVI 88
Supply Crises in the West 51
2025 76
Preventing Crises and Conflicts 54

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