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**IMPLICATIONS OF THE KYOTO PROTOCOL ON
CLIMATE CHANGE**

HEARING
BEFORE THE
COMMITTEE ON FOREIGN RELATIONS
UNITED STATES SENATE
ONE HUNDRED FIFTH CONGRESS
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C O N T E N T S

	Page
Eizenstat, Hon. Stuart E., Under Secretary of State for Economic, Business, and Agricultural Affairs	5
APPENDIX	
Prepared statement of Chairman Helms	37
Prepared statement of Senator Hagel	38
Prepared statement of Senator Feingold	41
Prepared statement of Hon. Stuart E. Eizenstat	41
Additional Questions for the Record Submitted by the Committee to Assistant Secretary Eizenstat:	
Responses to Questions Submitted by Senator Helms	49
Responses to Questions Submitted by Senator Hagel	53
Attachments:	
1. Office of Management and Budget Report to Congress on Federal Climate Change Expenditures, March 1998	72
2. Climate Change Technology Initiative Briefing Materials.	72
3. U.S. National Communication to the U.N. Framework Convention on Climate Change, "Climate Action Report"	80
4. Prepared Testimony of Dr. Janet Yellen, Chair, Council of Economic Advisers, Before the House Commerce Committee, March 4, 1998	80

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WEDNESDAY, FEBRUARY 11, 1998

U.S. SENATE,
COMMITTEE ON FOREIGN RELATIONS,
Washington, DC.

The committee met, pursuant to notice, at 10:25 a.m. In room SD-419, Dirksen Senate Office Building, Hon. Chuck Hagel presiding.

Present: Senators Hagel, Thomas, Grams, Biden, Sarbanes, Kerry, Robb, and Feingold.

Senator HAGEL. The committee will please come to order.

Mr. Secretary, welcome. It is nice to have you.

Not unlike many occurrences up here, we are getting started late because of a vote. So we appreciate very much your patience.

Senator Helms is in another meeting and has asked me to get going. We know your time is valuable and our colleagues are anxious to talk a little bit about this issue. So we are grateful that you could come up.

It could be worse, Mr. Secretary. You could be dealing with Iraq. This is just an "easy" subject this morning, climate control.

I am going to begin with my statement and then will ask my colleagues for any additional comments. Then we will get started with your statement, Mr. Secretary, and questions.

Senator HAGEL. In the last session of Congress, as you know, Mr. Secretary, I chaired three subcommittee hearings in advance of the Kyoto Conference. We now have a finished product from Kyoto. The administration refers to this finished product, the Kyoto Protocol, as a "work in progress."

This leaves people with the mistaken impression that the treaty remains under negotiation and that objectionable parts of the treaty can be negotiated away before it is submitted to the Senate for advice and consent. But this is not the case, I think, as you know.

This treaty cannot be amended until it goes into force, and even then, only by a three-quarters vote of all countries that have become party to the protocol. Developing countries which are not bound by any emissions limits in this protocol make up more than three-quarters of the world's Nations.

Certainly, later actions of subsequent U.N. Conferences might add to the protocol. It might expand U.N. regulations and interpretations of how the treaty would be carried out. Later actions might define compliance measures and enact U.N. sanctions against countries that do not meet their legally binding commitments under the treaty.

But what is in the protocol today, including its many objectionable provisions, will not change prior to it coming into force—that is, assuming it ever comes into force.

This treaty requires a seven percent below 1990 levels emissions cut for the U.S. during the years 2008 to 2012. In real terms, this would be a devastating 40 percent reduction in projected emissions for the United States. It is inevitable that this extreme cut in energy would cause serious harm to our economy.

Furthermore, developing countries like China, Mexico, South Korea and 131 other Nations are totally exempt from any of these new restrictions placed on industrial countries. A later change of the treaty requires, as I mentioned, a three-quarters vote after the treaty has already gone into force.

Last July, the Senate went clearly on record by passing 95 to 0 Senate Resolution 98, the Byrd-Hagel Resolution. Even more significant than the 95 to 0 vote is that the bipartisan resolution has 65 cosponsors.

This resolution was very clear, as you know. The resolution called on the President not to sign any Kyoto Treaty or agreement unless two minimum conditions were met. It said the President should not sign any treaty that either caused serious harm to the U.S. economy or that did not place legally binding obligations on the developing countries to limit or reduce their emissions in the same compliance period as that required for industrialized Nations.

Nowhere does the resolution mention the administration's nebulous standard of achieving "meaningful commitments by developing countries."

As our colleague and coauthor of Senate Resolution 98, Senator Robert Byrd, noted in his floor statement of 2 weeks ago, the Kyoto Protocol fails—fails—to meet either of the requirements of Senate Resolution 98. It fails to meet the minimum criteria set unanimously by the U.S. Senate.

In his floor statement, Senator Byrd called on the President not to sign this treaty, and I agree with Senator Byrd.

I will not now go into all of the details on why this particular protocol is so seriously flawed. But they can be grouped in five general areas. These are: no developing country commitments is number 1; number 2, economic harm to the United States economy; number 3, fair treatment for U.S. interests; number 4, impact on our national sovereignty; and, number 5, impact on our national security.

I expect to ask those questions as we get later into the hearing.

This returns us to the question of whether the President will choose to sign this treaty when it is open for signature at the United Nations on March 16 of this year and, if he does, then whether he intends to send it, send this treaty if he signs it, to the Senate this year.

I hope, Secretary Eizenstat, that you will be able to give us a clear answer to these questions and others.

The President claims that the treaty, again, "is a work in progress." If so, it makes no sense to sign a flawed treaty, thereby giving our future leverage in negotiating strength away. This would be compounding the President's and Vice President's past mistakes. These include agreeing to the Berlin Mandate and pub-

licly calling on our negotiators in Kyoto to show increased flexibility, which the Vice President did when you and your team were trying to hold to the President's own position that he clearly enunciated last October.

The President's position included insistence that emission cuts not go below the 1990 level and the so-called "meaningful participation of developing countries."

I will be very interested in understanding from you, sir, what precisely was it that the administration meant and does mean by "meaningful participation of developing countries" since we gave it away in Kyoto.

But if the President believes this treaty is good enough to sign, it should be good enough to submit to the Senate for open, honest debate. The American people have a right to know exactly what the President has obligated them to do under this treaty.

There is also a document known as the United States Constitution. The U.S. Senate has a constitutional responsibility to provide its advice and consent for all treaties agreed to by the President. Until this treaty is ratified by the Senate, there should be no action taken by the administration to implement obligations under the treaty through Executive Order, regulation, or budgetary fiat.

I look forward to receiving your comments on these points as well as others.

[The prepared statement of Senator Hagel appears in the Appendix.]

Senator HAGEL. With that, let me call now, Mr. Secretary, on my colleagues for any statements they may wish to submit. Secretary Robb—I mean Senator Robb.

Senator ROBB. Sometimes I'm not sure, too. [General laughter]

Senator ROBB. Thank you, Mr. Chairman.

Secretary Eizenstat, thank you for coming today. I have known you for many years and have a very high regard for your skills in a variety of different areas, and certainly you are unsurpassed as a negotiator. You have just been given a fairly tough list of questions to respond to. I regret that I have two other hearings, one in Intelligence and one in Armed Services, that are taking place at the same time. But I wanted to hear your opening statement and I hope you will be able to address as many of the concerns that were raised by Chairman Hagel as possible.

I was one of the cosigners of the letter that indicated that we thought at the very least we ought to be concerned about serious adverse economic impact on our own economy and particularly participation in some form by the developing countries.

I must say that those concerns have not yet been addressed to my satisfaction. But I commend you on the negotiations with a very difficult topic, with disparate views given to you from many participants in the United States. I look forward to your testimony here.

I may have some followup questions for the record later on. But at the very least I thank you for what you have attempted to do, which will probably provide little comfort and not a great deal of understanding at this point. But I recognize the task you have undertaken.

Thank you, Mr. Chairman. I look forward to Secretary Eizenstat's opening statement.

Senator HAGEL. Senator Robb, thank you. Senator Grams.

Senator GRAMS. Thank you very much, Mr. Chairman. I would like to recognize your outstanding efforts. You have spoken with authority and conviction on behalf not only of the U.S. Senate but also, I believe, for the American workers, for families and for taxpayers as well.

First I would like to point out to the members of this committee and to Mr. Eizenstat that the Clinton Administration and the Department of Energy just 11 days ago missed their legal and contractual deadline to begin taking possession of spent nuclear fuel from commercial nuclear plants across the country.

Now what does this mean and how does it apply to today's hearing?

The DOE's failure to take spent nuclear fuel means that nuclear power plants across our country will have to begin shutting down permanently because of inadequate storage space for the spent fuel. And as you may know, nuclear power has been responsible for 90 percent of all the cuts in carbon dioxide emissions from U.S. electricity production since 1973.

As more and more nuclear plants shut down in the United States, more and more are being built all across Europe. France is leading the way, and developing nations, such as China, are about to significantly increase their use of nuclear power as well as Japan.

Meanwhile, here at home, due to the rhetoric of extremists and also the lack of a clear energy policy, we are hamstrung, unable to act because of politics and not because of science or technology. I cannot stress enough how important it is to recognize that the failure of this administration to address nuclear waste storage will lead to even greater economic hardship as a result of this treaty.

Now we simply cannot meet our energy needs into the next century by signing on to treaties which legally bind us to unreasonable reductions in energy output while at the same time we eliminate cleaner energy by closing down nuclear power plants.

Europe recognizes this, as do many other nations with whom we have to compete for jobs, and industry, and markets. They know we agreed to a treaty which works for them and hurts us. But who does it really hurt? Not Bill Clinton and certainly not Al Gore. It puts off any real political problem for them until well after they are out of office.

This treaty hurts moms and dads, grandmas and grandpas. It significantly will impact senior citizens on a fixed income. It takes an enormous swipe at miners, loggers, truckers, farmers, anyone who has any work in energy intensive professions. It means less income for families that are struggling to survive and educate their children. It means Americans may have to face a challenge to their way of life and their standard of living.

If that is what this treaty holds for Americans, it cannot and will not be supported by this committee or the U.S. Senate.

I think this body made that point very clearly when we voted unanimously last summer on the Byrd-Hagel Resolution. I only regret that this administration saw that vote as a mere suggestion,

rather than acknowledging the clear and unambiguous message that it contained.

I am going to be listening very closely today to hear what direction was given to the Kyoto negotiators by Vice President Gore. I want to know how the administration intends to meet the demands of this treaty. I would like to know how you will pursue developing nations' participation later this year in Argentina.

I also would like to know today, as does everyone else on this committee, when this treaty will be presented to the Senate for ratification.

So, again, thank you, Mr. Chairman, for your efforts in holding today's hearing. I am looking forward to the discussion and for the quick delivery of this treaty to the Senate for ratification procedures.

Senator HAGEL. Senator Grams, thank you. Mr. Secretary, welcome again. Please proceed.

STATEMENT OF HON. STUART E. EIZENSTAT, UNDER SECRETARY OF STATE FOR ECONOMIC, BUSINESS, AND AGRICULTURAL AFFAIRS

Ambassador EIZENSTAT. Thank you, Mr. Chairman. It is a pleasure to be here with you and with Senator Robb and Senator Grams. I appreciate the participation you personally made in going to Kyoto and the amount of time you, Senators Baucus, Chafee, Enzi, Kerry and Lieberman spent on this issue.

Rarely has there been an environmental issue more complex or important, and rarely has there been a greater need for the executive branch and Congress to work closely together.

I will divide the summary of my testimony—and I assume the full version can be submitted into the record—into four parts: first, a short discussion of the science; second, the key features of the protocol; third, efforts to correct misperceptions; and, fourth, a brief review of the President's own Climate Change Technology Initiative.

First, on the science, human beings are changing the climate by increasing the global concentration of greenhouse gases. Over the last century, greenhouse gases have been released to the atmosphere far faster than natural processes can remove them. There is no ambiguity in the data.

In this first chart (indicating) the actual data is shown in blue from ice cores taken by scientists. The orange part indicates also actual data taken from the atmosphere in Hawaii.

What this dramatizes quite clearly is that the concentrations of greenhouse gases have grown by some 30 percent and especially since 1960. You can see the increasing slope of these concentrations in the orange from 1960 to the present date. That slope will increase and continue to increase dramatically.

The authoritative intergovernmental panel on climate change, representing the work of more than 2,000 of the world's leading climate change scientists from more than 50 countries and representing the best synthesis of the science on climate change, made a number of important conclusions.

Under a business as usual environment, concentrations of greenhouse gases could exceed levels not seen on the planet for 50 mil-

lion years. The projected temperature increases of 2 to 6.5 percent over the next 100 years could exceed rates of change not seen for the last 10,000 years.

The chart which we have over here (indicating) indicates both the increase in the concentration levels and in temperature. It indicates the dramatic connection between concentrations of CO₂ and other greenhouse gases and the dramatic increase in temperatures which would occur if those are left unabated.

Increased temperatures are expected to speed up the global warming cycle. It will lead to a drying of soils and, in some areas, increased drought. Overall, there will be an increase in precipitation.

Sea levels are expected to rise between 6 and 37 inches over the next century. A 20 inch sea level rise could double the global population at risk from storm surges and low lying areas are particularly vulnerable—much, for example, of coastal Louisiana and the Florida Everglades as well as other parts of the world.

This would also affect human health. It would exacerbate air quality problems and diseases that thrive in warmer climates, including malaria, and yellow fever would increase. It is estimated that by the end of the next century there would be an additional 50 million to 80 million cases of malaria each year if this climate change continues unabated.

It would also lead to a dramatic change in the geographic distribution of a third of the earth's forests. Nine of the last 11 years are among the warmest ever recorded. Increases in floods and droughts are expected as global warming occurs.

Some have argued that we should wait. Science tells us that this is a recipe for disaster for the concentrations of greenhouse gases in the atmosphere will continue to rise each year.

This is a problem that has developed over the course of a century and it will take many decades to solve.

We should look, Mr. Chairman and members of the committee, at Kyoto as an insurance policy against the potentially devastating and irreversible impacts of global warming. If we act now, the premium on this insurance policy will be far more reasonable and less costly than if we delay and hope that the problem created by greenhouse gases will somehow go away. Indeed, it is like a life insurance policy whose costs grow significantly if we delay year after year in insuring ourselves.

In the case of global warming, we will not have a second chance. Failure to act could lead to irreversible consequences and we will be committing ourselves, our children, and our grandchildren to a very different planet, and they will never forgive us.

Second is the actual conference and protocol itself. It represents an important achievement. But it is a framework for action, not a finished product yet ready for Senate consideration.

President Clinton and Vice President Gore established three major objectives for us to negotiate and, as a result of the negotiations, we achieved the first two and have made some progress, though not enough, on the third.

Our first objective was developing realistic targets and timetables among the developed countries. These had to be credible in terms of beginning to reduce the dangerous buildup of greenhouse

gases and yet measured enough to safeguard U.S. prosperity at home and competitiveness abroad.

In the end, we secured the key elements of the President's proposal. The U.S. concept of multi-year timeframes for emission reductions was selected rather than a fixed, single year target. This will allow our industries greater flexibility to meet those targets.

In addition, the timeframe 2008 to 2012 was the U.S. timeframe, not the earlier periods preferred by the European Union, Japan, and others. This will help cushion the transition and the effect on businesses and workers.

We also got the concept of differentiated targets for key industrial powers ranging from 6 to 8 percent below baseline levels so that our competitors are taking on similar, and in some cases with respect to the European Union, deeper obligations than we are.

When changes in the accounting rules for certain gases and offsets for so-called "sinks" that absorb carbon dioxide are factored in, the level of effort required of the United States is very close to the President's original proposal to return emissions to 1990 levels by 2008 to 2012, representing at most a 3 percent real reduction below that proposal and perhaps less.

An innovative proposal shaped in part by the United States allows certain activity, like planting trees and good forest practices, that absorb carbon dioxides, called "sinks," to be used to offset emission requirements that industry will have. This will be a significant way of reducing costs and burdens and will be a particular benefit to the United States.

Also, as proposed by the U.S., the Kyoto Protocol covers all six significant greenhouse gases, even though the European Union and Japan fought until the last moment to cover only three.

Our second Presidential objective was to make sure that countries could meet their obligations by flexible market mechanisms, rather than mandatory policies and measures, like carbon taxes, favored by the European Union and many other developed countries.

The Kyoto Protocol enshrines a centerpiece of this U.S. market based approach, the opportunity for companies and countries to trade emissions permits. In this way, companies or countries can purchase less expensive emissions permits from companies or countries that have more permits than they need. This is not only economically sensible but environmentally sound.

We have had a very positive experience with permit trading in our own acid rain program, which has reduced costs by 50 percent from what was expected. This has been confirmed by a number of experts in a recent *Wall Street Journal* article.

So the inclusion of these market based mechanisms and the right to trade in the open market was a signal victory for the United States. Indeed, we went even further by achieving a conceptual understanding with several countries, including Australia, Canada, Japan, New Zealand, Russia, and the Ukraine, to trade emissions rights with each other. This umbrella group could further reduce compliance costs.

Let me be very clear. The commitment we made in Kyoto would not have been made, could not have been made, were it not for the flexibility that these mechanisms give us that were also agreed to.

Until we are satisfied with the rules and procedures yet to be established, the promise of Kyoto will never be realized.

Our third objective was the one that you, Senator Grams, Senator Robb, and others alluded to, which is to secure meaningful participation of key developing countries. This is obviously a concern that the Senate shares, as evidenced by last summer's Hagel-Byrd Resolution.

Global warming is, after all, a global problem. It requires a global solution, not only for the developed but also for the key developing countries. By 2025, the developed world will be emitting less greenhouse gases and the developing world will be emitting more than the total of the developed world.

We encountered significant resistance in Kyoto by some developing countries to meaningful participation in solving the global warming problem. Still, developing countries may, as a prerequisite for engaging in emissions trading, which will be very valuable to them, voluntarily assume binding emissions targets through amendment to the annex of the protocol that lists countries with targets.

Some developing countries seem to believe, wrongly, that the developed world was asking them to limit their capacity to industrialize. We have made it clear that we support an approach under which developing countries would continue to grow but in a more environmentally sound and economically sustainable way.

Let me be very clear. The Kyoto agreement does not meet our requirements for developing country participation. Nevertheless, a significant down payment was made in the form of a provision advanced by Brazil and strongly backed by the United States. This defines a Clean Development Mechanism which fully embraces the U.S. backed concept of joint implementation with credits. This will build a bridge with incentives between the developed countries and developing nations and will allow companies in the United States and elsewhere in the developed world to invest in projects abroad and get credit for it against their emissions targets, again lowering the burden on U.S. industry by allowing this kind of participation.

They can either invest or they can simply purchase the permits.

In determining what developing countries ought to do, we, of course, need to be aware that the circumstances of developing countries may vary. Any one size fits all approach to meaningful participation of developing countries is unlikely to prevail.

I would like, Mr. Chairman and members of the committee, to deal very briefly with some misperceptions. The first is that the Kyoto Protocol will imperil the ability of our military to meet its worldwide responsibilities. This is absolutely untrue.

We took special pains, working with the Defense Department and with our uniformed military, both before and in Kyoto, to fully protect the unique position of the United States as the world's only super power with global military responsibilities. We achieved everything they outlined as necessary to protect military operations and our national security.

At Kyoto, the parties, for example, took a decision to exempt key overseas military activities from any emissions targets, including exemptions for bunker fuels used in international aviation and maritime transport and from emissions resulting from multilateral

operations, such as self defense, peacekeeping, and humanitarian relief.

This exempts from our national targets not only multilateral operations expressly authorized by the U.N. Security Council, such as Desert Storm or Bosnia, but, importantly, also exempts multilateral operations that the U.S. initiates pursuant to the U.N. Charter without express authorization, such as Grenada.

A second misperception is that somehow the protocol will create a "super U.N. secretariat," threatening U.S. sovereignty and national decision making through alleged intrusive verification procedures and prior approval of individual emissions trades. This also is not so.

The review process in the protocol largely codifies already existing practices under the 1992 Rio Convention. The review process is not by some secretariat, it is intergovernmental. Experts are nominated by governments. The review teams meet with government officials and with others by invitation. In reviews under the prior convention, the teams have met with Congressional staff, with representatives of the private sector and environmental organizations, but only with their concurrence. Any other visits, such as site visits, would take place only—and I underscore only—if approved by the host country, including in this case the United States, and only if the private sector involved agrees to it.

So the notion that somehow people are going to be swooping down on U.S. private property is utterly, completely, and totally false.

In addition, let me be unmistakably clear. We will not accept nor do we anticipate an approach that would require prior approval of individual emissions trades by any international body. Trading will be done between interested nations and their companies based on market principles.

A third concern is that somehow on the one hand we are told it will threaten U.S. sovereignty by dictating national decisions on implementation, and yet, on the other, it lacks mechanisms or teeth to verify compliance. In fact, the protocol strikes an appropriate balance between these two extremes.

We firmly opposed and succeeded in opposing mandatory harmonized policies that were desired by others and that would have imposed on us uniform ways to reach our targets. We prevailed. The protocol leaves to the parties themselves to decide how best to meet their targets based on national circumstances. If somebody else wants to do it by heavy carbon taxes or heavy central regulation, that is their business. We are going to do it by market driven mechanisms alone.

At the same time, we obviously could not tolerate a free-for-all. And so, the protocol calls for national measurements of emissions, detailed reporting, and in depth reviews on an intergovernmental basis, not by some secretariat.

Finally, there are some who suggested that the protocol is going to result in a huge government transfer of foreign aid to Russia. This is also not true. U.S. private sector firms may choose to purchase international emissions credits from Russia and from others. This will be a private decision, and, indeed, it is one of the crucial ways to achieve cost effective emissions reductions for U.S. firms.

Now where do we go from here? First, rules and procedures must be adopted to assure that emissions trading rights, joint implementation, and the Clean Development Mechanism operate efficiently and smoothly. In addition, we will work closely with our industries to be sure they are satisfied that the emissions trading system which is developed is as efficient and effective as possible to meet their needs. I have already met with industry and I have told them: you have to tell us if it satisfied your needs. We cannot tell you.

Most significant, we have to work to secure the meaningful participation of key developing countries. We will put on a full court diplomatic press to bring developing nations into a meaningful role to help solve the global climate challenge. We will accept nothing less nor would we expect the U.S. Senate to do so.

As the President has indicated, the U.S. should not assume binding obligations under the protocol until key developing countries meaningfully participate in meeting the challenge of climate change and more progress is clearly necessary. It obviously would be premature to submit something to the Senate when the Senate itself has asked for this kind of participation and we have not yet achieved it. That is the great obligation we have to assume over the coming months and, if necessary, years.

The President outlined last October a three stage approach to address climate change at home. As a first installment, he announced in his State of the Union Message a proposal for a \$6.3 billion Climate Change Technology Initiative over 5 years to cut U.S. greenhouse gas emissions. These will mean tax cuts combined with R&D incentives to take cost effective, practical steps to position us to meet the challenge we face early in the next century.

We have no intention by executive fiat of going around the Senate's constitutional prerogatives—absolutely none. This is a down payment that the Senate itself can make to get us on a path so that we will be ready for any obligations we may later assume with the Senate's advice and consent.

We in the administration have great confidence in the power of U.S. ingenuity, innovation, and technology to help us meet our goals. Indeed, I think this will stimulate this ingenuity in remarkable ways.

An example is the partnership for a new generation of vehicles which will get up to three times the fuel efficiency of today's cars in a recent announcement by the chairman and CEO of General Motors about his goal for a new generation of automobile.

In closing, this administration is committed to work with you and the Congress both to realize the potential of the Climate Change Technology Initiative of the President and to craft our ongoing approach to climate change. We have the power to lead the global effort and Congress holds the key. What is done or not done today will determine the kind of world we leave to future generations and the conditions of life they will face.

But we can not, in conclusion, ignore what science is telling us. We would do so at our peril. And, again, what we are looking for is a kind of insurance policy, one that we can afford, one that is prudent, but one, Mr. Chairman and members of the committee, if we fail to act, if we fail to recognize what these scientists and

charts are telling us, will be infinitely more costly to do in the future without action now.

Thank you very much and I look forward to your questions and comments.

[The prepared statement of Ambassador Eizenstat appears in the Appendix.]

Senator HAGEL. Mr. Secretary, thank you.

Let me ask the distinguished ranking member of the Foreign Relations Committee, Senator Biden, for any opening comments. Then, after Senator Biden's comments, we will go to questions.

Senator BIDEN. Thank you, Mr. Chairman. I will withhold my opening comments until it comes time to question.

Mr. Ambassador, I think you did an incredible job. It is obvious two major things remain to be done. But when I get to the questioning, I will pursue those at that time.

Thank you for the opportunity, Mr. Chairman.

Senator HAGEL. Yes, sir.

We will take a 5 minute rotation period for questions and I will begin.

Mr. Secretary, again, thank you for coming up here. I think there is little doubt that everyone on this panel who has dealt with you over the years has a very, very high regard for you, including this junior Senator from Nebraska in the time that we have had to get acquainted over this last year and a half. I have appreciated it.

I say that up front because I think it is important that we all understand our respect for you and the kind of job that you have done for this country over the years in many positions.

I would like to take you through a series of questions and I will have more later. My colleagues I know will want to ask questions. Let me begin with this.

Can you tell us if at this point the President is prepared to sign the protocol in March? Or when would the President sign this if he intends to sign it?

Ambassador EIZENSTAT. Mr. Chairman, the protocol is open from the middle of March 1998 to the middle of March 1999. We would plan to sign the protocol within this 1 year signing period provided in the agreement. We have not yet determined the precise timing and we will sign at a time that makes the most sense in terms of the overall diplomatic situation.

The issue that is more significant is ratification. As the President has said, we are not going to submit the protocol for ratification until we get the kind of participation from key developing countries that we want to achieve and that you want us to achieve. That will be the great obligation on our shoulders in the months, and, if necessary, the years ahead.

Senator HAGEL. Are you saying, then, that you will or you will not, upon the President's signing the protocol, send it to the Senate?

Ambassador EIZENSTAT. Again, we don't know where we will be between March 1998 and March 1999, how far we will have come in terms of getting this meaningful participation that we desire and that the Senate has made unmistakably clear it requires.

If we have not obtained that—and I think it would be a stretch to imagine that in that 1 year period we will have achieved that

because it is going to take a great deal of work—then we would not be in a position to submit it. If we have, we would be. That is the key issue.

So I cannot give you a definitive answer because we don't know where we will be at the end of the signature period. But, again, I think, quite frankly, it is a real stretch to imagine that we will get the kind of meaningful participation that we desire and that the Senate requires in that 1 year timeframe.

Senator HAGEL. You heard my comments in my opening statement, Mr. Secretary, regarding the process of amending. Unless there is some misunderstanding here within the committee and within the rules, it is my understanding that we would have some difficulty going back and changing any of the dynamics of this Kyoto Protocol.

Would you take us through how this would happen and how it would work using specific examples on developing nations, such as when the Chinese have said straight out—they told me with a number of my colleagues from the U.S. Senate present—that they had no intention of signing anything and would not, as you know, even consider signing anything on a voluntary basis, as well as other members of the G-77?

Ambassador EIZENSTAT. No one knows better than I do—and, of course, you were there as well—the difficulty we had with some of the developing countries, including China and India. It was not uniform, but certainly they were in the lead.

First, it would require an amendment, as you suggest, for major changes in the treaty. However, a mechanism is created by which countries can, if they wish, voluntarily assume binding obligations, and that is one of the things that we will be pressing developing countries to do.

Let me, if I may, mention a couple of things on the developing country side because I think it is important to understand what was accomplished and what was not.

First, I see a spectrum of developing countries. There are those, for example, who are already members of Western industrial institutions—for example, the OECD. Mexico and South Korea would be examples and there are other countries, such as Argentina, that are knocking on the door.

I think that for those countries, they ought to assume, if they are members, in effect, of an industrialized organization, the kind of binding reductions over time that we have done.

Second, there are other countries that are not at that stage of development but who can afford to make binding reductions or perhaps, if not reductions, at least reducing the rate of increase by an efficiency standard. One of the things we have said to these countries is if you are concerned about your own stage of industrialization, then you ought to be concerned also about energy efficiency and sustainable development. We are working on a formula that is emissions per unit of GDP so that they would cut their rate of growth.

For still others, there may be other ways to meet those commitments. Bilaterally, subregionally, and multilaterally through the international financial institutions we will be working to achieve that result. We, for example, want to make sure if the World Bank,

the Asian Development Bank, or the Inter-American Development Bank make large loans or grants for power plants and other projects, that they are done in ways that are environmentally sound.

But it is also important to recognize that the developing countries did begin a process. It is not sufficient. But we should not think they did nothing.

For one thing, for example, they agreed to the creation of this Clean Development Mechanism. This is a way of beginning to bring them into the process. It has a double benefit. It brings them into the process, but it gives our companies credits for any clean projects that they agree to or any credits that they buy.

Second, developing countries also agree to advance the implementation of their existing commitments under the 1992 Rio Convention.

Third, I believe, Mr. Chairman and members of the committee, it will be a very, very powerful incentive when this trading rights regime begins and we have international emissions trading as we already have in the Acid Rain program in the United States.

In order to be a party to an emissions trade, a developing country is going to have to take on binding obligations. So that in and of itself will also create an incentive for developing countries to take on these binding obligations.

Senator HAGEL. Let me just ask a followup question to this and then we will go to Senator Biden.

I understand your point about incentives and the possibility of developing nations signing on for the reasons you mentioned, and I suspect there are more.

Why would we sign a treaty, though, why would we put ourselves in a position when, in fact, there is no assurance that China, India, and 132 other nations that, as you say, will be the biggest manmade greenhouse gas emitters in the next few years, China being the largest by the year 2015, will join? And, as you suggest as well, and I agree, if this is a global problem, it requires a global solution. So why would we go ahead and put ourselves in a position with the possibility that these nations would come on board and restrict ourselves to legally binding mandates, restrict our economy and all the dynamics of our society when the Chinese and other nations have made it pretty clear that they have no intention of moving forward on this?

Ambassador EIZENSTAT. That is a good and important question. Let me answer it in the following way.

First of all, we will not be assuming legally binding obligations on ourselves until and unless we have that meaningful participation. Let me underscore that. We will not be assuming legally binding obligations. Only the Senate of the United States can take that upon the United States, and we will not submit it to the Senate until we have that, until we are satisfied and you are satisfied that we have that level of achievement.

Senator HAGEL. May I also ask: that means the administration will not go forward in trying to implement any dynamic of this Kyoto Treaty through regulation, budget, fiat, executive order, until, as you suggest, it is brought before the U.S. Senate?

Ambassador EIZENSTAT. Yes, sir.

We have no intention, through the back door or anything else, without Senate confirmation, of trying to impose or take any steps to impose what would be binding restrictions on our companies, on our industry, on our business, on our agriculture, on our commerce, or on our country until and unless the Senate of the United States says so.

Now, with respect to the signature issue, which was the second part of your question, there are two factors there. The first is we believe it is important sometime during this 1 year period to lock in the kinds of commitments that we got from the other developing countries and the achievements we achieved.

We got sinks in, we got flexible market mechanisms in, we got our budget period in, we got multi-year budgeting in, we got the joint implementation with credits in the form of the Clean Development Mechanism in. These were all brand new concepts, literally brand new. Nobody had ever heard anywhere—not just in the developing world, nobody in Europe had ever heard—of an emissions trade as we have already been doing domestically.

Nobody knew what a sink was except as something in which you wash dishes. No one had any idea what joint implementation with credits was.

These were U.S. concepts. We have now gotten countries to agree to that and we want to lock that in.

Last, we didn't want to isolate ourselves, having achieved this, in terms of the ability to continue to get other countries to take this seriously by being the only country in the world that does not sign the treaty.

Now, again, the timing, you will understand, has to be done tactically so that we do it at the right diplomatic moment. But I can assure you that this administration has no plans to and will not in any way, shape, or form, take executive action, preempting your constitutional right to make this ultimate decision.

We will push forward with things like tax credits and R&D, assuming Congress approves it, which, of course, is just getting us in line for this—but nothing more and nothing less.

Senator HAGEL. Thank you. Senator Biden.

Senator BIDEN. Stu, I think you did an incredible job. The hardest part of all of this is that I think Senator Byrd may be right when he referred to it as a "work in progress." I mean, first of all we finally have stopped fighting about whether or not it is a problem. I come from what some people facetiously refer to as the "State of du Pont." [General laughter]

Senator BIDEN. Fifteen years ago or 20 years ago, in my State, where the chemical industry is big and the automobile industry is big, and it is a small State, there was a great debate about whether this was a problem. There was no problem. We didn't have any problem. It has taken a long time and a lot of scientific data and investigation, and the consensus has been arrived at by those companies and many others that there is a serious problem.

How you get from acknowledging a serious problem—and we can disagree on the consequences of the problem and how far out it becomes serious, more serious—how you get from that acknowledgment to an international code of conduct, in effect, is a painstaking process.

So I don't know how you could do it any other way than the way you are approaching it.

One of the things you said here today is that, although Senator Kerry of Massachusetts and the distinguished chairman both have taken intense interest in and know a great deal more about this issue than I do, and have differing views or perspectives, the vast majority of American businesses, American citizens, and American farmers assume that what happened in Kyoto was binding. In my State, they think that OK, well, they went over and signed that damn thing and this means we cannot make a Durango in my State anymore, and this means such and such—all of which is not true, all of which is not true.

So the important point—and we only have 5 minutes, so I will use this time for my statement—is that you have laid out here that nothing is binding upon the United States of America at this moment, and even if and when you sign, you cannot, the President of the United States cannot bind—cannot bind—the United States. Only the U.S. Senate can do that. And it is crystal clear to you, a man who knows this body incredibly well—we have been here a long time, off and on, together—that this body, to use the vernacular, is not going to ratify a treaty that does not deal with the two outstanding, more than fine tuning, problems, that is, the issues of the countries in question from Brazil to China and their participation, and many others which I have left out, as well as how this emissions trading mechanism will, in fact, work.

I just want to say to you that I thought it was remarkable that you went to Japan, you prevailed on the timetable, you prevailed on the average emissions, on the budget period, you prevailed on inclusion of the six gases that contribute to the greenhouse effect, and you prevailed on dealing with the military for multilateral operations as well as ones we initiative, and you also essentially laid in and accepted a provision for market based practices for trade in emissions. These are significant.

Now I don't know how you are going to hold on to them, to be blunt about it. I am not sure how you are going to keep them. I am not sure how, other than signing at some point, other than signing, you are going to be able to hold this center together. You are going to have one hell of a job trying to bring in the largest future polluters in the world.

But I have great faith in your skills and I just hope you are able to figure out how in the hell to do that. That is because, to state it very plainly, and I surely cannot speak for the Senate—although my daughter thinks I was born in the Senate I have been here for so long—the truth of the matter is, absent dealing with the two major issues you mentioned, there will be no ratification of this treaty.

I hope that between now and next year we can all work toward trying to help you and the administration in dealing with the two problems—and there are others—rather than just suggesting that what came out of Japan is dead on arrival. I hope we won't do that, because you have forthrightly acknowledged that you know the hurdles you have to get over to send this up to the Senate for any practical prospect of winning.

I have an open mind. I think you are correct, and I hope in the meantime, by the way—I know the chairman didn't mean this—but I hope that we do not suggest that we should not independently, unrelated to any other nation in the world, further deal with emissions issues here in this country for our own safety's sake regardless of anybody else doing anything at all. So I am sure, I hope there will be suggestions, legislative initiatives, and executive initiatives relating to dealing with the environment that may, in fact, fall under the purview of what is captured in this agreement, but not because it is in the agreement.

Again, I thank you for listening. I apologize for being late and I will now yield to those who have made it more of their business to be informed on the details of the treaty. But, like the work in progress, I think this is an educational process, including educating those nations that have not signed on on what their own naked self-interest is.

Ambassador EIZENSTAT. I appreciate that very much.

If I may be permitted just a brief comment—

Senator HAGEL. Certainly.

Ambassador EIZENSTAT. I would like to relate again back to Senator Hagel's statement as well as Senator Biden's.

When we talk about our own action, I want to be clear. For example, Presidents for years, Republican and Democrat, have been trying to put good practices into government procurement, into insulation, into clean car initiatives. We would continue to do that so that, for example, the U.S. Government is a model.

Our military—and I am proud that they are sitting behind me—our military has been the leader in energy efficiency. They are already very close to meeting the 1990 targets.

Now, admittedly some of it is because of base closings. But they have put in real energy efficiency. So I don't want you to misunderstand. Obviously, those would be going on because they are good practices, not because we are subverting Senate will.

Second, I have had the honor of knowing Senator Byrd for 20 years. There is no State that has a more direct relationship to this problem than West Virginia. I have been very impressed by the way in which Senator Byrd has looked at this issue.

He, no more than me, is not a scientist. But he has listened to the science. I think a lot of us have.

Without being in any way impertinent, let me just suggest for those who have legitimate concerns—and there are real questions that have to be answered—if one believes these figures, these charts—and this chart (indicating) is not a projection; this chart (indicating) is a projection, but this one is not a projection. These are actual core samples that were done from glaciers and so forth which were melting. They show this dramatic curve. Then the orange is actually taken from measurements in Hawaii on top of a very tall mountain.

If one believes that slope, if one believes the science and the likely projections over here (indicating), one has to say what is one going to do about it. What do you do about it?

Now, God knows, this is not a perfect treaty. No treaty is. There are always compromises. But it is a reasonable down payment on a beginning of that process. It is not complete. It is a work in

progress. As Senator Biden very eloquently said, the problem is so complex, no one agreement can encapsulate everything that needs to be done.

We did not succeed as we'd hoped to with developing countries. We didn't. I am the first to admit it. But we achieved a lot of other things. We made a first step, and that gives us the foundation to then go to developing countries and say now look, we are willing to do our part if you will do your part, and if you don't do your part, there is not going to be a treaty—period.

Senator HAGEL. Thank you.

Senator GRAMS.

Senator GRAMS. Thank you very much, Mr. Chairman.

Mr. Eizenstat, again, welcome. I would like to go back to some of the things I mentioned in my opening statement, and that is that in this country we rely primarily on fossil fuels and nuclear power to meet our energy needs.

This administration, however, just 11 days ago, as I outlined, failed to meet both its legal and contractual obligations to begin accepting spent nuclear fuel from commercial plants across the country. And, as we know, this means it could have very permanent effects on plant shutdowns, on the decreased use of nuclear energy, which is very likely. I have seen figures which show that nuclear power plants are credited, as I said, with 90 percent cuts in carbon dioxide emissions from U.S. electricity production since 1973.

Additionally, countries throughout Europe, again, like France, are turning more and more to nuclear power. China has plans for substantial use of nuclear energy now and in the future, as does Japan.

Meanwhile, we continue to hide from nuclear power thanks to extremist rhetoric and fear.

Now just how do you and the administration expect the United States to meet our energy needs in the years to come given the limits of Kyoto and our lack of nuclear energy policy?

Ambassador EIZENSTAT. That is a very important question. I was Ambassador to the European Union for 2½ years and was based in Brussels. I travelled widely in Europe and I know what nuclear power means in countries like France, where it supplies 70 percent of electricity.

I have been a very strong, unequivocal proponent of nuclear power. I believe that under Kyoto and post Kyoto, nuclear power will have to play an increasingly important role because it does not emit greenhouse gases.

I agree that we need, therefore, to look at our nuclear policy and I might say that when I served as President Carter's Chief Domestic Advisor, I had on my desk, literally, the Nuclear Siting and Planning Act which would have speeded up permitting. It was within perhaps 48 hours of being submitted to the Congress when Three Mile Island occurred, and we have never recovered since.

I cannot speak to the DOE issue and would defer to them. I would be glad to try to get them to respond to your legitimate concerns.

Senator GRAMS. We have tried and cannot do it.

Ambassador EIZENSTAT. But I will say also on the fuel issue that we were talking in 1977–78, when I was in the White House, about

salt domes and other ways. I think this country, under Republican and Democratic Presidents, ought to be doing more, ought to have done more. I think, again, nuclear energy has a very real role to play in this climate change issue. On that, I fully agree with you.

Senator GRAMS. Has the administration in these talks or in your consideration, then, considered the regional implications of complying with the treaty for areas which will have to replace energy from nuclear reactors, such as in my home State of Minnesota? About 30 percent of our power comes from nuclear. It would be awfully expensive to go to coal fired or other places to replace that.

So has this been part of your consideration and in your numbers as well?

Ambassador EIZENSTAT. It will be factored in.

There is a nuclear power initiative in the President's own budget to extend the life of plants. That is a beginning of the process. It is certainly not the end of it.

We would like very much to work with you to plan on how we could make nuclear energy more significant in the years ahead.

Senator GRAMS. I have just some other quick questions. What type of economic modeling, outside of the nuclear issue, has the administration done to determine the economic effects of this treaty? I want just to mention a couple of things.

The administration attempted, I think, an economic modeling effort, which has been branded a failure. In fact, the Director of the President's Council of Economic Advisers, Dr. Janet Yellen, testified before the House Commerce Committee that the administration's efforts were "futile."

How do you respond to that?

Ambassador EIZENSTAT. I regret that Janet Yellen is not here. We came very close to being able to arrange our timing. Unfortunately, the Economic Report of the President, which is the Council's major activity for the year, came out at the very time of this testimony or she would have been here to present our economic analysis. That analysis will be ready very shortly, and when I say very shortly I mean literally within a week or 2, and at an appropriate Congressional hearing we will lay that out.

I think you will find from here findings that the costs to the economy are reasonable and that there are, indeed, many benefits to doing this as well, health and other, and that, again, delaying action will only increase the cost.

Senator GRAMS. When you say costs are doable or can be absorbed, I know Senator Byrd is extremely interested in this. The United Mine Workers of America commissioned a study which considered economic impacts as a result of the reduction only back to the 1990 levels. Some of their findings included this: Nearly 1 of every 2 coal miners will lose their jobs. 1.7 million more American jobs will be eliminated as a result. Gas prices will increase 43 percent, fuel oil will increase 119 percent, electricity prices will increase by 94 percent.

You could go on and on. But how do you answer numbers and statistics like that?

Ambassador EIZENSTAT. Again, Chairman Yellen will have that analysis very shortly. I think you will find that it is dramatically different than those figures that you just indicated.

Many of the studies, Senator Grams, did not take into account things like offsetting costs of sinks, the offsetting costs of joint implementation with credits, the offsetting costs of emissions trading. When those are factored in, one sees that the costs go down very, very dramatically.

In addition, over the last several decades we have had these kinds of studies every time there has been an environmental initiative, whether it was clean water, clean air, ozone, acid rain. What we found is that we can, in fact, do both. We can have a cleaner environment and we can have a solid economy.

We have now an economy we can all be proud of: 14.5 million jobs have been created; an under 5 percent unemployment rate. And yet, we have an environment that is infinitely cleaner than it was.

We also have, and I think these studies do not take that into account, something called a Five Labs Study that was done by the five National Labs. They are totally independent. You know, nobody told them what to come up with. They made some findings about what technology can do and how we can reduce the burdens and costs on coal miners and others by coming up with what is the hallmark of America, and that is ingenuity and technology.

We believe that we are going to be able to develop cleaner plants and cleaner cars and that, indeed, having this kind of target is going to send a signal to the free market to innovate, and that that innovation will itself create jobs.

Senator GRAMS. Just one final thing. You mentioned that there were over 2,000 leading scientists from 50 countries. I have heard some questions about the names and everything. Could you just supply me in the future with their names and credentials?

Ambassador EIZENSTAT. Absolutely, and many came from the United States. We would be glad to.

I think this is the most definitive group and represents a basic consensus.

Interestingly, just within I would say the last couple of weeks, actually, when we got the 1997 final reports on weather which made 1997 one of the warmest years in history—it fell into a pattern where 9 of the last 11 years are among the warmest ever recorded—a lot of climatologists who were themselves somewhat doubtful have now said indeed there must be something happening here and it must be to some extent occurring from human conduct. So we will be glad to supply that to you, Senator.

[The information referred to appears in the appendix.]

Senator GRAMS. Thank you very much.

Thank you, Mr. Chairman.

Senator HAGEL. Senator Kerry.

Senator KERRY. Thank you, Mr. Chairman.

Mr. Chairman, I am going to use a little bit of my time to make a couple of opening comments, if I may, and then would proceed.

While it is not our responsibility here to provide testimony or anything, I would like to make a few observations as a member of the Observer Group with you, who spent time in Kyoto and has been following this issue. Then I would like to ask a few questions of Ambassador Eizenstat, if I may.

Let me begin by saying that I think it is very important to underscore the positive side of the ledger here and to recognize the circumstances in which we arrived in Kyoto.

In my judgment—and I was in Rio, and I was the chairman of the delegation that went to Cairo, so I have been through a few of these—we were a little less organized than we had been previously, regrettably, and I think some of the groundwork that needed to have been done was still hanging loose for various reasons.

So I thought that we arrived in Kyoto on a precipice. I was somewhat concerned initially about a change in sort of the personnel and the relationships of who was going to be negotiating.

I must say that Ambassador Eizenstat I thought did a superb job and I think his team did a superb job of pulling together a rather remarkable step forward in the face of some very, very tricky, complex, and difficult negotiating circumstances. I think the team negotiated skillfully and diligently with a remarkable stamina. I don't know how they stayed up the hours they did. And notwithstanding the long hours, I think nobody lost sight of the focus of interests that we were trying to protect—the interests that you had expressed, Mr. Chairman, with Senator Byrd, and the larger economic interests for our country.

So I think we need to look at the positive. One hundred fifty nine countries came together with no argument over the science. Prime ministers, presidents, and whole governments sent their delegations there with an understanding among all of them that we needed to do something. There was no issue about the need to do something. The question was who takes the first steps and by what quantities and methodologies.

I think it is very important for people in the U.S. Senate, which seems to be the only place in the world where there is sort of a significant governmental effort to try to rewrite or reinterpret some of the science, to take note of this fact of 159 nations making this decision to come together.

Second, I think it is very important to put on the table the difficulties that Ambassador Eizenstat and others ran into in negotiating.

I was personally taken aback by it. In all of the dealings I have had in the 13 years I have served on this committee, I have never in my foreign travels run into quite the degree of anger directed toward the United States as was just palpable in our negotiations in Kyoto.

There has always been tension. We have always been, since World War II, certainly, the larger player on the block, and we have always suffered some slings and arrows for the perceived arrogance of some of the positions that we take.

But this was different, and I think Ambassador Eizenstat would agree with me that it was different. Two reasons particularly leapt out as to why it was different.

Reason number one is because of our failure to pay our dues at the United Nations and the sense people have that we are willing to throw our weight around without carrying our portion of that weight; that we are delinquent and, because of that delinquency, I think it has cost us in Kyoto, as I believe many people on the

international scene interpret it as costing us now in our efforts with Iraq.

The second point is that we went to Rio, and we signed on in Rio, and the U.S. Senate ratified the treaty in Rio which agreed to voluntarily reduce our emissions. And every nation in the world was able to sit in judgment on the fact that, not only did we not reduce, not even make some enormous effort to reduce, we significantly increased our emissions in this country.

And so, they sat there saying who are you kidding. You are telling us less developed countries that we have to come on board and you people have not even made a good faith, first step effort to prove you are willing to be serious about this.

So there are serious doubts about the bona fides that we brought to the table, notwithstanding the Clean Air Act, the Clean Water Act and other great efforts we have made in this country, which many of us tried to explain to them. But we were dealing in a very difficult climate.

The third point I want to make is this. There was a very significant misinterpretation which could not be undone in the circumstances I just described by the developing countries as to what was expected of them. And because of the volatility that was in the air and the pressures of coming to cloture in a short period of time, there just was not a capacity, even with all of the delegation meetings that we had, to pull them back from this misinterpretation.

I believe in these ensuing months, before we go to Buenos Aires, we have the opportunity to reach out with personal diplomacy, with bilateral diplomacy, with multilateral, quietly to bridge that gap.

None of these developing countries understood the degree to which we are not requiring them to have the same implementation plan, the same timetable, the same levels. All of them saw our efforts to include them as a conspiracy to minimize their growth whereas it is much the contrary.

But because the concepts of joint implementation and emissions trading and other things were wholly new to them, without the time to explain them we simply were not able to bridge the gap and bring them on board.

I am quite convinced that, over a period of time, they will recognize that what we are really asking them to do is simply sign on to the notion that this is a global problem with varying responses needed by different countries.

In fact, China today is taking very positive steps in many, many areas of the environment and embracing whole new technologies, many of which would adequately satisfy already what we are really needing to get in the context of this kind of treaty.

In addition, there are distinctions between countries. While China was very adamant, many of us found other less developed countries or developing countries wholly prepared to participate, anxious to take part in the upsides of this treaty, which are the joint implementation and other matters.

There is a golden lining for us, too, with respect to that. I just met 2 days ago in Massachusetts with the Environmental Business Council. We have hundreds of companies in our State, as there are in California, Texas, Florida, and other States in the country, all

of which are pushing the frontier of technology in remediation mitigation, in clean air, best use, and so forth.

This notion that this represents a job loss to us is incomprehensible when measured against the technological journey this country has led in since the war.

We have enormous ability to be able to produce jobs through this endeavor, and the experience of the 1980's, when President Reagan came in and pulled the money out of the Energy Institute in Colorado is one of the clearest examples of what happens when we diminish or relinquish our research and technology pushing efforts.

The Germans and Japanese leapt to the forefront of photovoltaics and renewables, and now, as the former Communist Bloc countries come on line seeking those technologies, unfortunately there are other countries they go to rather than us for the leading technologies in those areas.

If we push the curve, as the President's budget seeks to do, with \$6.3 billion of technology effort over the next years, we can regain that lead and we can provide the jobs.

There are a final two points I would quickly make.

The joint implementation effort and emissions trading opportunities here ought to also be viewed in their proper light. There is enormous technology transfer available in this treaty. It is ground breaking in its capacity to take the United States and other developed countries' technologies and assist the developing countries to avoid making the mistakes we made even as they grow.

This is, I think, one of the most brilliant and important parts of this treaty. We should look on that as pure opportunity—economic opportunity and environmental opportunity. I think it is important for our colleagues in the Senate to understand the full measure of that opportunity.

In addition to that, it can even be argued—and I regret to say this—that if you accept all of the science as these countries have and you come here looking at these charts with their increasing curves, the truth is that what happened in Kyoto is not enough, frankly, to turn that around. Most environmentalists and most scientists will regretfully have to swallow hard to tell you that truth.

But this treaty merely tries to get us down toward stabilization and slightly below it. Nobody makes the argument that this is a level sufficient to solve the problem of global warming.

So we need to be very, very cautious in whatever measures of opposition we bring to even these efforts as we think about where we are going in the future.

The last comment I would make in terms of opening is that the benefits always get hidden here. The benefits are always overridden by statistics that do not adequately take into account the kinds of things Ambassador Eizenstat just talked about—the mitigation, the counter technologies, the emissions trading, the joint implementation, all of these upsides that are more difficult to measure. But when you read these dastardly figures, they do not take them into account.

But they never take into account the upside benefits of health, of what happens with respect to energy efficiency and of national security. We have become far more energy dependent on foreign oil, not less, since the Gulf War. We fought a war over oil only a few

years ago. And, even as we become more dependent, we ought to be thinking about how we turn that around.

This treaty has the silver lining of actually requiring us to begin to become more energy efficient and less dependent. That increases the national security of the United States.

So the upside benefits it seems to me also need to be put on the table.

Mr. Chairman, I thank you for your indulgence. I won't ask questions in this round.

Senator HAGEL. Thank you. Thank you, Senator.

Mr. Secretary, as a matter of fact, I find Senator Kerry's comments interesting. He is right about his sense of the anti-Americanism which you dealt with every second of your time in Kyoto. That seems to me should give us even more pause, seeing that, living with that, as you did, as Senator Kerry and I saw that strong, intense, anti-Americanism there, even more pause as to the issue of fairness and functionality of any kind of agreement we make here when you are allowing 134 developing nations to essentially have, by the dominance of their numbers, the sway on this treaty. I think that is a very important issue. I know it is with American industry, American business, with the AFL-CIO, that is, will we be treated fairly? Will this continue, this big, "Ugly American, you have polluted the world, you have done us all in, you have taken advantage of our resources"? That is a concern.

Let me shift to a couple of other areas, to economic issues.

We are all sorry that Dr. Yellen is not here. You may know that I have asked many times for the administration to send somebody up here who could talk to us about the economy, some of the issues that Senator Grams was referring to, major issues. Aside from the debate over the science, whether it is contradictory, whether it is unclear, whether it is there or not, if, in fact, we would go forward here, it is going to be at some cost to our economy.

Now I am not disregarding what Senator Kerry is talking about, initiatives in technology and things that we know about. But the fact is, when you are talking about the kind of numbers we are talking about here, the administration surely is going to have to come forward with some economics here, some models, some studies.

One of the biggest problems we have here with the administration on this issue, and I think, generally, with the people across this country who would be affected most by this, is where are those numbers, who is addressing this, and that we are not focusing on the reality.

The theoretical is one thing, and addressing the science is something. But when you are talking about people losing jobs and our international competitiveness being questioned, being imperiled, being threatened, and all that goes back from that—standards of living and the future of our children—I would like you to deal a little bit with that issue and when are we going to see something?

Ambassador EIZENSTAT. Let me take both aspects because Senator Kerry led off with it as well.

On the anti-Americanism, I think no one bore more the slings and arrows of outrageous fortune in that regard than I did. I sometimes, frankly, thought I was in a 1950's time warp and that we

were in the old North-South debate, rather than the globalized economy we all believe we are in.

But there are two aspects to it that give me confidence. First of all, we worked our way through that, and, with our leadership, with the help of Chairman Estrada, who is a tremendous chairman, and with the help of other developing countries who did not take such an extreme position—Senator Kerry is right; particularly some of the Latin American countries were much more reasonable—we were able to work through that anti-Americanism and come up with all of these concepts—flexible market mechanisms, joint implementation with credits, reasonable budget periods, and trading rights, and so forth—that were essential to us.

A second point on the anti-Americanism—and I agree 110 percent with Senator Kerry—is there is a real education issue here. The developing world did misunderstand what it was we were suggesting and somehow thought it was imperiling their industrialization. Their argument was look, you have been polluting the climate for 100 years and now you industrial countries are telling us, just as we are beginning to industrialize, what we can't do. We can show them how it is good for their economy to be more energy efficient, that development has to be sustainable to be real. I think with that education we will begin to get countries on board. But that will take time. Yet it will happen.

With respect to the issue of sort of being overwhelmed, the way in which this is structured, this is a conference of parties. There is not going to be any centralized bureaucracy which tells us what to do. We have a very important say-so. Developing proper rules for trading is absolutely critical, and we will be working with you and industry to assure that we get this.

Last, on the cost issue, I assure you that Chairman Yellen's absence here is not due to the fact that now we do not have a model. Quite the contrary. We have done an economic study, relying on other models. That study will be available very shortly.

Indeed, had her timing worked out with the economic report, she was fully prepared to come here and sit with me. You do have a right to know the cost impacts and we will provide them.

Senator HAGEL. Well, that is reality and you understand that. I am not sure people in the White House understand that, but that is what real America is looking at here.

Ambassador EIZENSTAT. They have a right to it.

May I say, again, that no one lives in a vacuum. We live in a world of relativism, and we have to look at the commitments we've made relative to those that our major competitors took. And, when you look at that, what did Japan assume? What did the 15 countries of the European Union assume who are our major competitors?

You will see that our obligations were essentially the same or even less than theirs. And when you add in sinks, things that we have particular advantages with because of our forests, we come out very well compared to our major competitors and certainly no worse.

Senator HAGEL. Well, I think that is debatable. But I will take that back up in another round. Let me add just one thing.

With all due respect, Mr. Secretary, to your answer regarding the intensiveness of the anti-American feeling over there, the fact is you left Kyoto with not one developing nation signing up. That is the cold, clear fact that we are dealing with here, which makes all of us very uneasy.

Just one very quick question and then Senator Feingold has a number of questions. He has been patient.

It is my understanding that, as you negotiated, prior to the negotiations there was a master document that the negotiators were working off of. Can you tell me if that is correct and who, then, produced that? If there is such a document, would you share that with the committee?

Ambassador EIZENSTAT. If you are referring to the initial drafts by Chairman Estrada, a sort of working draft, there were working drafts with brackets that had been put on over the course of, oh, perhaps a year of negotiations, where we put certain brackets around items we couldn't accept and other countries did. That is the only document I can think of.

Senator HAGEL. This is a document that I have been told you were working off of that showed each country's baseline emissions and you didn't have any kind of master document—"you," the negotiators, not the U.N. or Estrada.

Ambassador EIZENSTAT. Our team did have information about the emissions levels of other countries. But I never had one sort of master document that I was operating from. I had negotiating instructions, but not something that you refer to there.

I would be glad to try to look to see if there is anything relevant, but nothing that fits the description that you just have given me comes to mind.

Senator HAGEL. Thank you.

Senator Feingold.

Senator FEINGOLD. Thank you, Mr. Chairman.

Let me, first of all, ask that my full statement be placed in the record.

[The prepared statement of Senator Feingold appears in the Appendix.]

Senator FEINGOLD. Let me also begin by just thanking my two colleagues here who obviously have devoted an enormous time to this. That is in addition to all of the other responsibilities they have. To devote that much effort to something this complicated is impressive and I am appreciative of it.

I find myself in the position of obviously not knowing all the details of the impact of the protocol on the country and on Wisconsin. This hearing, which reviews for the committee the evolution of the United States negotiating position from stabilizing its emissions at 1990 levels to agreeing to a 7 percent reduction, is a first step in developing some understanding of this.

Some of the predictions that have been made regarding the impact of the Kyoto Protocol are very serious and concern me. They need to be addressed and I know the Secretary is already doing that. But let me begin for a couple of minutes by asking you something that has already been raised of me in Wisconsin, Mr. Secretary. You have already touched on it.

Some manufacturers in my State have raised concerns that the administration will be implementing the protocol without the United States actually ratifying the protocol. You have already said in answer to an earlier question about this that there are no binding agreements to that effect.

But the specific question that has been raised to me was whether or not the budgetary proposals having to do with \$6 billion in tax credits are, in effect, a way to implement the protocol without ratifying it.

I would appreciate it if you would respond to that.

Ambassador EIZENSTAT. First of all, on your first question or statement with regard to targets, the target we agreed to represents, at most, a 3 percent real reduction and possibly less, below the target that the President has initially set before the negotiations. The remaining 4 percent or so results from changes in the way the gases are treated. We benefited by having six gases in rather than three and particularly benefited by a factor of 3 percent or more by the inclusion of carbon absorbing sinks—that is, forests and things—which will remove a burden from Wisconsin in other industries that they otherwise might have had to assume.

Second, I want to reiterate that we are not implementing binding obligations on this country without Senate ratification—period.

Third, with respect to the President's program of tax credits and R&D incentives, these are to get us in a position where we will be further down the road and won't have to make the kind of drastic reductions that otherwise might be called for. These are voluntary. Congress has to fully debate and approve them. They are good energy practices. They are incentives for industry to do more, similar to what other Presidents have done in other circumstances. They are not some covert effort to implement obligations or assume binding obligations. They are really to make this country more energy efficient, and by doing so we will be in a better position if and when the Senate ratifies to meet our obligations. We will have gotten a fair start.

Senator FEINGOLD. Is it fair to say, then, that we could have expected those tax credits or incentives to have been in the budget regardless of whether the Kyoto Accord had been entered into?

Ambassador EIZENSTAT. Yes, because the President had talked about those before there was a Kyoto Protocol. We have enhanced them by another billion dollars to show our earnestness in moving forward. But they already were being planned and talked about well before the Kyoto Protocol was signed—excuse me—was negotiated. It was not signed.

Senator FEINGOLD. I appreciate your directly addressing that because it is being mentioned to me.

Mr. Secretary, do you see any chance that the protocol will enter into force without the U.S. ratifying it?

Ambassador EIZENSTAT. No.

Senator FEINGOLD. How will the administration be seeking additional involvement of developing countries? I think you have touched on this, but if you could, say a little more.

Ambassador EIZENSTAT. We are going to undergo a full diplomatic press. This will include the following: using multilateral fora, like the G-8, to encourage our developed country partners to get

into swing with us in encouraging developing countries to be involved; doing the same in the OECD; using international financial institutions, like the World Bank and the regional development banks, to agree only to fund projects abroad in the energy area which are greenhouse gas friendly; bilateral efforts.

Senator Kerry, I will tell you if there is one lesson that I drew out of this, it is that if you go back into a G-77 context and try to get this done, it won't get done. We have to deal country by country with the key countries involved, and we will be doing that bilaterally.

We already have, for example, with China the beginnings of that—it is only the beginnings, but the beginnings—that Vice President Gore negotiated through a bilateral environmental agreement. We also will use subregional and regional fora, whether it is the Summit of the Americas, working with MERCOSUR, to get them to do so. And we are going to do the education job. We are going to point out to them the advantages of assuming real limitations, or at least limitations on their growth to their own economy.

In addition, we are going to point out to them that if they want to take advantage of the benefits of emissions trading, which is a potentially huge advantage for them, they cannot do that without assuming binding emissions targets.

They are going to see, Senator Feingold—I am absolutely certain of this—over time, when they see how emissions trading works and how profitable it is for the companies selling credits, they are going to want to be part of that.

We are also going to work on the joint implementation with credits concept, the Clean Development Mechanism to implement that. So it will be a multifaceted effort. It is one that will take time, but we are committed to do it. We know how important it is to the Senate.

But may I say, if the Senate had never passed Hagel-Byrd, if it had never passed Hagel-Byrd, we would be doing the same thing because we believe that this is a global problem and it cannot be solved by the developed countries alone.

Senator FEINGOLD. Thank you, Mr. Chairman.

Senator HAGEL. Thank you, Senator.

Mr. Secretary, you alluded to this earlier, but take us through how this works with the U.N. The U.N. now has over 50,000 employees. Much of the concern, at least from the people that I think many of us hear from across this country is my goodness, we are going to allow the United Nations to administer, to enforce, and what else, what we are doing.

Would you reassure us as to how this is going to work? Who enforces, who administers? What is the recourse? Say my farmer out in Nebraska comes in and has somebody test soil. And, by the way, this is not an exaggeration, as you know. You know what the appendix looked like in this document, and you know that Article 2 deals with agriculture, and you know very specifically what that soil composition is supposed to be. So somebody comes in and tests soil. I don't know how it works, but you tell us. Then what is the recourse? Do we go to the Hague? How does that happen?

Ambassador EIZENSTAT. I want to assure every farmer in this country, every person who works in an industry in this country

that there will be no visits by any international body to which the U.S. Government does not invite them and that they themselves permit that to occur. It is very important to understand this.

Senator HAGEL. I am a little confused. If there are legally binding mandates, you are then going to say that if the farmer wants to be tested, even though the United States is part of a legally binding, mandated forum here, that he can or can't be?

Ambassador EIZENSTAT. What I am saying, Senator, is that compliance under this agreement—and this is something we insisted on—is essentially national. It relies on the United States to do the heavy compliance work.

Now there will be teams. These will be intergovernmental teams. They will be review teams that will look at data that we supply, that we, the United States of America supply.

Senator HAGEL. United Nations teams? When you say there will be teams, what kind of teams? United Nations teams?

Ambassador EIZENSTAT. They will not be from any secretariat. They will be chosen by the countries who will be participating in the reviews—for example, the Annex I countries. So there will be Canadians on the team and so forth.

But what does the team do?

Senator HAGEL. So we have the possibility of a multi-national team visiting sites in America?

Ambassador EIZENSTAT. No, sir—not unless we invite them and not unless the person on whose property they wish to go invites them.

Senator HAGEL. And so, if a farmer in Nebraska does not want to invite a United Nations team in to look at his soil, that is all he has to say, I don't want them in?

Ambassador EIZENSTAT. That is exactly correct.

What will this team, this intergovernmental team do? They will meet with U.S. Government officials, just as they have already met with Congressional staffs under Rio. They will look at our data. They will try to verify the data we supply. But they will not be able to have the capacity to do intrusive investigations of sites without the approval of our government and without the approval of the person involved. That is a very important thing to recognize.

This is essentially self-reporting and it does not impose some U.N. secretariat swooping down on people not only unannounced but uninvited or unwanted.

Senator HAGEL. But how is this enforced? If these are legally binding mandates, how, in fact, if that is the case, what you just said, how do you enforce this? If any other signatory to the treaty says I am not interested in having you come look at my coal mine or my farm, where is the enforcement here?

Ambassador EIZENSTAT. OK. First of all, Annex I parties have to have in place a measurement system for greenhouse gas emissions. We already basically have ours. Most of the developed countries do. But this will be something that will provide a baseline for measurement.

Second, there will be this intergovernmental process, nominated by governments, who will take data and meet with our officials.

Third, we will try to insure compliance with the obligations by making it clear that countries that are not in compliance with the

reporting requirements cannot receive credits for joint implementation projects.

Now, fourth, there is a need—and this will be elaborated also, and this is why we call it a work in progress—this will also have to be elaborated, the precise rules that will govern compliance and enforcement. We have this kind of outlined but it needs to be filled in.

Senator HAGEL. So we don't yet know how this will work.

Ambassador EIZENSTAT. What we do know is there won't be any intrusive, unwanted, uninvited visits. What we do know is that it relies largely on national compliance. What we do know is that there is not going to be some international secretariat insisting on compliance. It will be done through an intergovernmental process in which we are fully involved.

Filling out the details of that framework—and that is why I call this a framework for action—will be the work over the next months and years. But we have taken out those concerns that people had, Senator Hagel, that there would be again some intrusive, U.N. mandated search, swooping down unannounced, uninvited, and unwanted. That will not happen.

Senator HAGEL. When you say you have taken them out, you took them out of what?

Ambassador EIZENSTAT. We assured that that was not in the Protocol.

Senator HAGEL. So those are unfounded concerns across America?

Ambassador EIZENSTAT. They are completely unfounded concerns.

Senator HAGEL. OK.

Senator Kerry.

Senator KERRY. Thank you, Mr. Chairman.

Mr. Secretary, in response to the chairman's comment and inquiry simultaneously about the 134 developing countries and the atmosphere and us being pushed around by that, it struck me that, to the contrary, we were remarkably successful in holding our ground and achieving sort of a common sense conclusion based on the merits of our arguments.

I thought you might just sort of summarize, if you would, please, what you thought were the list of sort of accomplishments with respect to what we went in to fight for and what we came out with. Just make sure we are clear on the record.

Ambassador EIZENSTAT. I think it is very important in response to Senator Kerry's comments, and, Senator Hagel, you obviously saw that as well, that we recognize what was accomplished.

The United States of America does not allow itself to be pushed around by anybody, and we did not. We got multi-year budgeting, rather than having 1 year, which other countries did not want. We got our budget period, 2008 to 2012, rather than the Secretariats, and the EU's, and Japan's, and the developing countries' earlier budgets which they wanted.

We got the joint implementation with credit concept through the Clean Development Mechanism.

We got emissions trading and the kind of enforcement and compliance we did. All of those were done notwithstanding the opposi-

tion, because we had clear positions, we had clear negotiating instructions from the President and Vice President. We stuck to those. We achieved reasonable targets and timetables. We got flexible mechanisms. All of those were achieved.

Now you were absolutely right, Senator Hagel. We did not get the binding obligations by developing countries. That is what we have to work on.

But, my goodness, when you look at the opposition that we had to all of these other things, Senator Kerry, we got all of these, notwithstanding not only the objections of developing countries but those of the European Union as well. The six gases is another example.

This is something that not only our environmental community but the business community that was in Kyoto insisted on. The EU and Japan did not want six gases. They only wanted three because it made their numbers look better. That's number one. Number two, they knew that they had rapidly growing gases in the other three areas, more so perhaps than we did. They did not want to cover it.

We said no deal unless it's six gases. We got six gases covered. That also gives us at least a percent off of our commitment.

The sinks are another example. Again, this is a novel concept, the notion that good forestry practices would somehow count in favor of our targets so that we could take them as credits. Again, we probably get 4 percent or so on that, 3 or 4 percent. That was a new concept, not something that was immediately approved by either the developed or developing world. We worked through that opposition.

Let me put it very bluntly. Every country, however anti-American their rhetoric may have been, knew there was not going to be an agreement unless the United States of America was a player and its essential requirements were provided for.

That does not mean we got everything we wanted. But we got virtually everything that we came looking for except the developing country piece. We got a down payment on that with the joint implementation with credits and with other provisions that I have mentioned, and that is what we had to work on.

Senator KERRY. Thank you very much.

In addition, there are many CEOs of various companies in this country who are very excited about the prospects of what this treaty can accomplish. There are businesses that are very supportive of it as there are some that are concerned about it. You can draw the lines fairly clearly about what interests are represented there.

But I wonder if you would share with the committee and those interested for the record why joint implementation, emissions trading, and the Clean Development Mechanism are, in fact, cause for business to view this positively and what you think the upside for business is as a result.

Ambassador EIZENSTAT. There are several upsides. First of all, when I was Under Secretary of Commerce for International Trade, one of the areas that is the fastest growing export area is environmental exports. We indeed created a whole new unit for environmental exports. With Kyoto, we are going to find that the demand under the Clean Development Mechanism, under joint implementa-

tion with credits, as developing countries want more of this technology is going to be fantastic. The number of jobs that will be created through environmental exports, measurement devices and the like, is just going to be tremendous. It is really going to be an enormous growth area.

Second, what our industries said to us is don't impose carbon taxes, don't put in a top/down regulatory system. Give us the flexibility to meet these targets by market driven mechanisms, and that is what emissions trading really does. It gives a company, a utility in Nebraska or in Massachusetts the opportunity to joint venture in India, Pakistan, South Korea, or China, and not only provide that country with an incentive to begin to get involved in cleaning this problem up but in getting a credit to boot so that they don't have to put on an additional scrubber, perhaps, so they don't have to take additional demands on their own shoulders.

In other words, it is the cheapest, most efficient way economically and it is environmentally sound because it will encourage developing countries who want to sell these credits and developed countries under Annex I to do as much as possible to have excess credits that they can sell. The same is with the joint implementation and Clean Development Mechanism. This is a bridge between the developed and the developing world. It is a partnership. Again, a company in Nebraska or in Massachusetts can do one of two things.

It can invest in that particular power plant or forestry project in a developing country; but if it does not want to invest, it can just purchase the credit that comes from it.

So in all of these ways, we have done what industry wanted, which is to provide flexible, nongovernmentally driven, non-tax driven mechanisms.

Senator KERRY. Mr. Chairman, I know my time is up, but may I just ask one more question because I have to leave?

Senator HAGEL. Yes, sure.

Senator KERRY. I appreciate that.

Recently, there was a letter, the so-called Compass letter to the President from a number of former national security personnel, and this letter, signed by Jeane Kirkpatrick, Richard Cheney, Caspar Weinberger and others, suggested that the Kyoto Treaty threatens to limit the exercise of American military power: "by exempting only U.S. military exercises that are multinational or humanitarian, unilateral military actions, as in Grenada, Panama, and Libya, will become politically and diplomatically more difficult."

I know that this is not, in fact, the case. But I would like to ask you, for the record, if you would address that question so we can try to answer it.

Ambassador EIZENSTAT. First of all, there is not one person on that list that I do not respect. Each has served his or her country in very positive ways and what they say has, therefore, to be taken seriously.

It is, unfortunately, completely incorrect. Everybody is entitled to at least one mistake in life.

If they would have checked with our uniformed military and with our Defense Department, they would know that every requirement

the Defense Department and the uniformed military who were at Kyoto by my side said they wanted they got.

This is self-defense, peacekeeping, humanitarian relief, and they even mention in there that this would not have covered Grenada. That is not so. That is not so. It covers not only multilateral operations expressly authorized by the Security Council, like Desert Storm in Bosnia, it also covers multilateral operations we initiate pursuant to the right of self-defense. Under the U.N. Charter, it does not have to be authorized by the U.N. A perfect example of that is Grenada.

When President Reagan went into Grenada to relieve that island of its communist dictators, it was a multilateral effort that we initiated. It wasn't done pursuant to the United Nations, but it was, in effect, pursuant to the Charter but not authorized by them. That is perfectly permissible.

We got bunker fuels covered.

There was also a concern by our military because of our unique situation with NATO where we have troops based in South Korea and in Europe and in many other countries that, somehow, countries would want to throw out U.S. troops, because they would be concerned that somehow the emissions coming from bases and so forth would count against them.

We got that taken care of by allowing a negotiation. We are willing to assume that ourselves.

So I think it is a fair statement to say that our military really believes that we did what they wanted, that we produced what they wanted. And if there is anything else that is required, which I do not believe there to be, that can certainly be taken care of in implementing legislation.

Senator KERRY. Mr. Secretary, thank you. I know that people in public life are easy targets these days and public servants do not get a lot of credit. But I will say that you and your entire team, I wish people in this country could have seen how hard, expertly and diligently you all labored on our behalf there. I thought it was a terrific job and I thank you for it.

Ambassador EIZENSTAT. Thank you, Senator.

Senator KERRY. Thank you, Mr. Chairman.

Senator HAGEL. Senator Kerry, thank you.

Mr. Secretary, if I could pick up on where Senator Kerry left off on the military issue, the Compass letter, you probably saw the full page ad in the paper this morning.

Ambassador EIZENSTAT. Yes, I did.

Senator HAGEL. There is another aspect of it which is national sovereignty. I would very much like to ask you to respond to that as well. But let's keep on the military point for a moment.

Are you saying that what essentially we have agreed to here would cover all United States unilateral military activity, that there is, in fact, a blanket exemption for our national defense forces?

Ambassador EIZENSTAT. What I'm saying is that we took care of those concerns the military had and that includes those actions we unilaterally initiate that have a multilateral component, as almost everything we do does.

For example, in Grenada we did not go to the Security Council. President Reagan did not go to the Security Council, but he involved some of the Caribbean countries in that process because we obviously want to have that kind of coalition. Those are fully covered, even if the U.N. Security Council never approves it.

Senator HAGEL. So, in essence, there is a blanket exemption for the United States military here?

Ambassador EIZENSTAT. There is the kind of exemption that they wanted. Yes, sir.

Senator HAGEL. Does that mean a blanket exemption? Did they ask for a blanket exemption?

Ambassador EIZENSTAT. They asked for what we gave them. That's what they asked for. I'm not trying to be coy. We asked them what do you need and this is what they told us and this is in there.

Senator HAGEL. So if I would ask any of our commanders, they would give me the same answer.

Ambassador EIZENSTAT. Well, if they were the same ones that were with me, they certainly would, and I hope that that is the case.

Senator HAGEL. You hope it is the case?

Ambassador EIZENSTAT. Yes, sir, because—

Senator HAGEL. I want a little more precise answer than that, Mr. Secretary.

Ambassador EIZENSTAT. I'll give you a precise answer.

Senator HAGEL. I'm asking you a question of whether, in fact, they asked for a blanket exemption—and I don't know that answer.

Ambassador EIZENSTAT. I can tell you that in the meetings I participated in—I don't know what happened in Virginia, but I can tell you in the meetings I participated in—we asked them what do you need. They told us and we got them for us. I also understand, although I was not privy to this, that there was a briefing by our uniformed military and our Defense Department of the committee that is responsible, the Armed Services Committee, in either the Senate or the House that asked these questions and that our military said that they were satisfied. Now I have only that to go on and that is as precise an answer as I can give you.

They told me that this is what they needed. This is what they produced and I am told they are satisfied with it.

Senator HAGEL. When we say "they," or when you say "they," who does that mean? Does that mean the Chairman of the Joint Chiefs of Staff or each of the Chiefs of the various services? You don't know?

Ambassador EIZENSTAT. I know that there was in Kyoto a representative of the Joint Chiefs of Staff, who represented himself as representing the views of the Joint Chiefs of Staff, and I wouldn't say he kissed me, but he came darn close to it in terms of telling me how much he appreciated what we had done and that they were satisfied with what was done.

Senator HAGEL. Well, if you would, provide for the record, since there is, I think, some unclear communication here, number 1, what, in fact, was requested by the military; number 2, who, in fact, requested it from the military; and, number 3, was there any change or deviance from that request. I think if we get those three

questions answered, that would give us a clearer understanding of what exactly they asked for and who asked for it.

Thank you.

[The information referred to appears in the appendix.]

Senator HAGEL. May I go back, Mr. Secretary, to a previous conversation we had on administration implementation of this? You made it pretty clear that the United Nations, that is, it is still unclear as to what exactly their role is, but you made it very clear that they would not be administering or implementing this treaty.

That, then leads me to believe that there would be agencies of our government that would be implementing the treaty, I suspect agencies such as the EPA.

If this, in fact, is correct—and please direct me in the right area here as to how we comply—what new laws and regulations will be required and how will you move on those new laws and regulations in order for us to be in compliance?

Ambassador EIZENSTAT. That is something that we will be working on in the coming months and we will be able to give you a more precise indication of that.

I can give you one example of something that would require legislation if you ratify the treaty. It is this.

We would want to do not only an international trading regime but we would have to do a domestic trading effort and that would require legislation.

In terms of the enforcement process, I am not immediately aware of anything that would require new legislation. I think it can all be done within existing authorities. But certainly if something arises, we will be working very closely to tell you. But I am not aware in the enforcement area that we require new laws.

Senator HAGEL. And, as you said earlier, we don't need to worry about now because that won't happen, and it will not happen until the President would sign the treaty and the Senate would ratify it, is that correct?

Ambassador EIZENSTAT. That is correct.

Senator HAGEL. Have you any idea on the cost of compliance by industry or by region? Do we have any of those numbers? Have we looked at any of those things?

Ambassador EIZENSTAT. With your permission, again, I am not an economist. I have enough problems being a lawyer and don't have to take that additional burden on. But Janet Yellen will be testifying at the next available opportunity. Again, she would have been able to testify here had we been able to work out the timing with the Economic Report. We will try to give you the best macroeconomic analysis we can.

Senator HAGEL. But surely, Mr. Secretary, as you negotiated this and those prior to your tenure would have had to factor in some costs.

Ambassador EIZENSTAT. Yes, sir, we did. We had with us a representative, John Gruber, from the Treasury Department, who had his handy computer, who at every turn, every time we made any significant proposal or we received one, factored the costs in. He was in constant contact with Washington, with Treasury, and with the Council of Economic Advisors. We did not sneeze without getting an economic analysis of it.

Senator HAGEL. You know, that is all interesting. But I find it even more interesting that you used those numbers and you used some format for modeling. You had to. Certainly there is something available. But yet, we have never been able to get any of that.

Ambassador EIZENSTAT. Well, as the World Resources Institute has indicated, there are scores of models. The models depend on different assumptions.

Senator HAGEL. But I am talking about the ones that you used to negotiate the deal in Kyoto.

Ambassador EIZENSTAT. Yes, sir.

Senator HAGEL. That is the only one I have ever been interested in and I think my colleagues, too, as to how did you then use the economic piece of this and how was that factored in; also what numbers did you use and where did they come from?

Ambassador EIZENSTAT. They came from Treasury and the Council of Economic Advisors, which, in turn, relied on other models, which they will be prepared, which Janet Yellen will be prepared to testify about in great detail.

Senator HAGEL. And we will look forward to that.

Mr. Secretary, we have kept you for a long time. As always, we are grateful for you and the work you do for this country.

Ambassador EIZENSTAT. Thank you, Senator.

Senator HAGEL. Am I supposed to do anything else? I guess I should just remind you that for all comments, additional points, anything for the record, we will keep it open for a couple of days. I will be sending up some additional questions as well.

Ambassador EIZENSTAT. Thank you for your courtesy.

Senator HAGEL. Mr. Secretary, thank you.

[Whereupon, at 12:20 p.m., the hearing was concluded.]

APPENDIX

Prepared Statement of Chairman Helms

SENATOR HELMS. The Committee meets today to begin consideration of the Agreement reached in Kyoto, Japan, in December regarding global climate change. This is the first time that the Committee will hear an assessment of the Kyoto Agreement by the distinguished Under Secretary of State for Economic Affairs Stuart Eizenstat. Secretary Eizenstat was brought in at the 11th hour to head the U.S. negotiating team in Kyoto.

Mr. Secretary, I think you are aware of my personal respect for you. For that reason, I must be frank: I believe that the Administration's policy on climate change, and the Agreement reached in Kyoto, are wrong-headed and bode ill for the United States.

The United States currently has a treaty commitment to reduce greenhouse gas emissions to 1990 levels by the year 2000. That is under the U.N. Convention on Climate Change. I think we can all agree that the U.S. will not meet that unrealistic goal. So I am at a loss as to why this Administration decided it was a good idea to go ahead and negotiate a follow-on Protocol to that obviously flawed treaty, which contains an even more extensive mandate and even more intrusive enforcement of the greenhouse gas emissions goals?

Why would the Administration—knowing full well that the United States cannot, and will not, meet the goals set in 1992—begin a massive campaign (headed, incidentally, by former Under Secretary for Global Affairs Tim Wirth) to press for a new, legally enforceable, treaty designed to try to force *additional* action?

Mr. Secretary, despite all their best efforts, the U.N. bureaucrats and the extremist environmental groups could not persuade the Bush Administration to sign onto a legally enforceable climate agreement in 1992. Their agenda in Kyoto was to get *this Administration* to do what the Bush Administration refused to do—that is, set a process in place that would lead to a *legally binding* international obligation. Apparently they succeeded.

I am, quite frankly, appalled that the Administration is seeking to end run the legislative process, and present the Kyoto Protocol to Congress as a fait accompli. In pushing forward this treaty policy, the Administration is attempting to circumvent Congress and thereby shift decision-making authority over U.S. energy policy to a small group of unelected U.N. bureaucrats and the foreign competitors of the United States.

Mr. Secretary, I cannot and will not let this happen on my watch.

I could detail some of the worst aspects of the Kyoto Protocol, but I will leave that to my distinguished colleague, Senator Hagel. Senator Hagel was in Kyoto during negotiations and I regard him as the Senate's foremost expert on the defects and deficiencies of the Kyoto Protocol.

Let me conclude by saying this: The President ought to slow down and take the time to read the tea leaves—scrap this defective Kyoto Protocol and reject the whole Kyoto negotiating process. Clearly, the developing world has no interest in the process except as a foreign aid cash cow. The Protocol is premised on the faulty idea that global changes can occur only when certain countries are asked to make commitments. In any event, this Kyoto Protocol has practically no chance of being ratified by the Senate, not on my watch.

If the Administration will come clean on its climate policy, and submit specific changes in law it would propose for the United States, it might possibly present an achievable plan to Congress. But not this turkey that took flight at Kyoto.

Let me spell it out: If the Clinton Administration insists on standing by this misguided treaty, then the Administration should submit the Kyoto Protocol immediately to the Senate. We will debate it, and vote up or down on it. Because we have a moral obligation to let American businesses—and the workers whose jobs may

hang in the balance—know whether they will be required to take on these enormous economic obligations in the next decade.

Prepared Statement of Senator Hagel

Today, we are conducting the first Senate hearing since the conclusion of the U.N. global climate conference last December in Kyoto, Japan, and we have with us the chief U.S. negotiator of this treaty, Undersecretary of State Stuart Eizenstat.

In the last session of Congress, a number of hearings were held in the Senate in advance of the Kyoto conference, including three in the Foreign Relations Subcommittee on International Economic Policy, Export and Trade Promotion, which I chair. I expect that the focus of today's hearing will be somewhat different, because we now have a finished product: the Kyoto Protocol. This is a document of 27 pages, 24 Articles, and two Annexes. It is a treaty now awaiting the signature and ratification of the participating countries, including the United States.

The Administration refers to the Kyoto Protocol as a "work in progress." This leaves people with the mistaken impression that the treaty remains under negotiation and that objectionable parts of the treaty can be negotiated away before it is submitted to the Senate for Advice and Consent. That is not the case.

This treaty cannot be amended until it goes into force, and even then, only by a three-quarters vote of all countries that have become party to the Protocol. Developing countries, which are not bound by any emissions limits, make up more than three-quarters of the world's nations.

Certainly, later actions of subsequent U.N. conferences might add to the Protocol. It might expand U.N. regulations and interpretations of how the treaty would be carried out. Later actions might define compliance measures and enact U.N. sanctions against countries that do not meet their legally-binding commitments under the treaty. But what is in the Protocol today, including its many objectionable provisions, will not change prior to it coming into force—assuming it *ever* comes into force.

This treaty requires a reduction in greenhouse gas emissions of seven percent below 1990 levels for the U.S. during the years 2008 to 2012. In real terms that would be a devastating 40 percent reduction in projected emissions for the U.S.! It is inevitable that this extreme cut in energy use would cause serious harm to our economy. Furthermore, developing countries like China, Mexico, India, South Korea and 130 other nations are totally exempt from any of the new restrictions placed on industrial countries. To later change the treaty requires a three-fourths vote after the treaty has already gone into force.

Last July, the Senate provided its advice to the Administration regarding this treaty and went clearly on the record by passing Senate Resolution 98, the Byrd-Hagel resolution, on a vote of 95 to zero. It is rare that a resolution critical of a major element of an Administration's foreign policy would receive such unanimous support in the United States Senate. Even more significant than the 95-0 vote is that this bipartisan resolution had 65 cosponsors, including 18 of my Democratic colleagues.

The Byrd-Hagel Resolution was very clear.

The resolution called on the President not to sign any Kyoto treaty or agreement unless two minimum conditions were met.

First, the Byrd-Hagel Resolution directed the President not to sign any treaty that placed legally-binding obligations on the United States to limit or reduce greenhouse gas emissions "... unless the protocol or agreement also mandates new specific scheduled commitments to limit or reduce Greenhouse Gas emissions for Developing-Country Parties within the same compliance period." Nowhere does the resolution mention the Administration's nebulous standard of achieving "meaningful commitments by key developing countries." The Byrd-Hagel Resolution was very clear—the United States should not sign a any global climate treaty that does not include binding commitments for the developing countries, such as China, Mexico, India, Brazil and South Korea, in the same time frame as the U.S. The Kyoto Protocol does not include a single developing nation.

Second, the Byrd-Hagel Resolution said that the President should not sign any treaty that "... would result in serious harm to the economy of the United States." The Kyoto Protocol would legally bind the United States to reduce our greenhouse gas emissions to seven percent below 1990 levels by the years 2008 to 2012. It goes much further than President Clinton's own bottom line of last October, where he pledged that he would accept nothing more than returning to a baseline of 1990 levels in greenhouse gas emissions. Independent economic studies of the President's po-

sition showed it would result in the loss of up to 2 million U.S. jobs, the relocation of at least six major U.S. industries to developing nations, a major slow down in economic growth and much higher energy prices for the American people. Yet, our negotiators agreed to a treaty that would have an even more devastating impact on the U.S. economy.

As Senator Robert C. Byrd noted in his floor statement of two weeks ago, the Kyoto Protocol fails to meet either of the requirements of Senate Resolution 98. It fails to meet the minimum criteria set unanimously by the United States Senate. Therefore, I join Senator Byrd in calling on the President not to sign this treaty, a treaty that so clearly runs against our country's national interests.

So what happened in Kyoto? How did we agree to such a bad deal for the American people? Today, Undersecretary of State Stuart Eizenstat will be testifying before the Senate Foreign Relations Committee and hopefully he will be able to provide some answers. Stuart Eizenstat brings professionalism and seriousness of purpose to every task he takes on. He was thrust into the position of being the chief U.S. negotiator in Kyoto after the man who had guided this process for years, Undersecretary of State Tim Wirth, abruptly resigned immediately prior to the Kyoto conference.

Despite his abilities, Undersecretary Eizenstat was severely hampered in his eleventh hour efforts to negotiate a treaty in Kyoto that would actually advance U.S. interests. The U.N. climate change negotiation process was critically restricted by the so-called "Berlin Mandate" that prohibited the negotiations from even considering any new commitments by developing countries. Under the guise of this "Berlin Mandate," which was made part of the negotiating process by Undersecretary Wirth in 1995, developing countries refused to even consider language that would allow them to "voluntarily opt-in" to an agreement to reduce greenhouse gas emissions. While all of the developing nations—especially China, Mexico, India, Brazil and Argentina—were represented in force in Kyoto and took part in writing and approving the language binding the U.S. and the other industrialized nations, they had no intention of participating in the treaty. And they got off without having to agree to anything, not even voluntary commitments at a later date.

Again, I believe even the Administration's position, as laid out by President Clinton last October, did not satisfy the basic minimum requirements of economic harm and developing country participation set by the U.S. Senate. However, at least the U.S. negotiators were holding firm to the Administration's position during the first week of the Kyoto conference, rather than caving to the European Union, the developing nations, U.N. climate change bureaucrats and international environmentalists who wanted the United States to agree to much larger cuts. That resolve vanished after Vice President Gore made a whirlwind visit to Kyoto for less than a day in the middle of the conference, and publicly instructed U.S. negotiators to show "increased flexibility." At this point, the United States lost any last vestige of leverage in the negotiations. The U.S. negotiating position became "get a deal at any cost." Which our negotiators did, at a great cost to the American people. As far as I can tell, the United States is the only country that came out of Kyoto worse than we came in.

In my view, the Kyoto Protocol is so seriously flawed that its problems go far beyond those specific criteria laid out in S. Res. 98. These problems can be grouped in five general areas: (1) developing country commitments, (2) economic harm, (3) fair treatment for U.S. interests, (4) impact on national sovereignty, and (5) impact on national security.

First, as already noted, the treaty fails to include new legally-binding commitments on the developing nations. In fact, Article IO of the treaty goes so far as to restate the so-called "Berlin Mandate" by emphasizing that the Protocol must be implemented "without introducing any new commitments for Parties not included in Annex I." The Administration has stated that it hopes to get "meaningful participation by key developing countries"—whatever that means—at the next U.N. conference planned for Buenos Aires next November. But the language of the Protocol itself clearly exempts developing nations from the binding commitments it requires.

Second, every serious economic study I have found predicted serious economic harm even if the Administration had held to its position of last October. Those included independent studies, some commissioned by the AFL-CIO, and some commissioned by business and consumer groups. These studies found job losses in the range of 2 million, large increases in energy costs, a 50-cent increase in gas prices, and a drop in economic growth rates of over 1% a year. These economic consequences would be particularly severe for American agriculture. Dramatic increases in energy costs would force production costs so high for many farmers that it would drive them right out of business.

The Administration questions these economic findings, but we are still awaiting the comprehensive economic model promised more than two years ago by the Clinton Administration. The Administration struggled with the model for a year and a half before finally abandoning the effort last summer after receiving strong criticism through the peer review process. In fact, the Chair of the Council for Economic Advisors went so far as to call economic modeling in this area "futile." Twice now, the Administration has pulled witnesses that were to address the economic consequences of this treaty in Senate hearings. At the hearing today in the Foreign Relations Committee, Janet Yellen, Chair of the Council for Economic Advisors, was scheduled to accompany Undersecretary Eizenstat, but pulled out of the hearing two days ago. I invited Deputy Secretary of the Treasury Larry Summers to testify on economic issues before my subcommittee last October. I have been told he was willing to appear but was prevented from doing so by the White House.

Third, this treaty is unfair to the United States. It gives the European Union the ability to pool its supposed "cuts" under the umbrella of the so-called "European Bubble." This permits Europe to avoid the kind of economic harm that will hit the American economy because the EU benefits from two unique circumstances: the collapse of dirty industry in eastern Germany and Britain's shift from coal to North Sea natural gas for economic reasons. Throughout the treaty, one finds provisions that protect developing country interests, require increases in U.S. foreign aid, and shift trade advantages away from the U.S. to our European and developing country trading partners.

Fourth, the treaty will undermine U.S. sovereignty. For the first time, the United States would give control of our economy to an international bureaucracy within the United Nations. Domestic energy policy is a basic component fueling economic growth. The Kyoto Protocol would give this new U.N. environmental bureaucracy the authority to determine energy use in the United States by determining what energy sources we could use and how much, effectively setting price controls and the rationing of U.S. energy. I fear we would set up a process where the United Nations could come in and shut down an American business because they violate U.N. mandates, or where the U.N. would place trade sanctions on the United States if we were to fail to comply with its mandates.

Finally, the treaty will have a severe impact on U.S. national security. We all know that our armed forces are the largest users of fossil fuels in the U.S. government. Before Kyoto, the Department of Defense asked for our negotiators to request a blanket exemption for our armed forces. The White House reportedly refused to seek such an exemption, afraid that other U.N. negotiators would not agree to such a demand. The Administration has claimed that the Kyoto protocol does, in fact, exempt our armed forces. It does not. All it does is exempt multilateral operations approved by the United Nations. If America should have to take military action alone, or without the approval of the U.N., does that mean the use of the United States military will be limited by the amount of greenhouse gases they would emit? Since when do U.N. bureaucrats set our national security and national defense policy? Clearly, the entire concept is ludicrous. But so is the Kyoto Protocol.

This returns us to the question of whether the President will choose to sign this treaty when it is opened for signature on March 16, 1998, and if he does whether he intends to send it to the Senate this year. I hope Undersecretary Eizenstat will be able to give us a clear answer to these questions.

The President claims that the treaty is "a work in progress." If so, it makes no sense to sign a flawed treaty, thereby giving away our leverage and negotiating strength. That would only compound the President and Vice President's past mistakes. These include agreeing to the Berlin Mandate and publicly calling on our negotiators to show "increased flexibility" when the negotiators were trying to hold to the President's own position of last October. The President's position included insistence that emissions cuts not go below the 1990 levels and the so-called "meaningful participation" of developing countries. I will be very interested in understanding from Undersecretary Eizenstat precisely what the Administration means by "meaningful participation" of developing countries—since you gave it away in Kyoto.

If the President believes this treaty is good enough to sign, it should be good enough to submit to the Senate for an honest and open debate. The American people have a right to know exactly what obligations the United States would have under this treaty. There is a document known as the United States Constitution. This document gives the United States Senate the responsibility to provide its advice and consent for all treaties agreed to by the President. If President Clinton signs this treaty, he should immediately submit it to the Senate. To do anything else would be a deliberate attempt to bypass the Constitutional authority of the United States Senate.

Unless and until this treaty is ratified by the Senate, there should be no action taken by the Administration to implement obligations under the treaty through executive order, regulation or budgetary fiat. I look forward to receiving Undersecretary Eizenstat's comments on this point as well.

Members of the Senate and the House will remain actively engaged in this issue. Oversight hearings will be held this year to ensure that the Administration is not attempting to implement this treaty prior to ratification. The Administration should be put on notice that the Congress will not allow this treaty to be forced piecemeal upon the American people until it is given the proper debate and receives the required 67 votes in support of ratification in the U.S. Senate. We will continue to monitor the ongoing negotiations leading to the fourth Conference of Parties in Buenos Aires in November.

The Senate's bottom line, as represented in the unanimous vote on S. Res. 98, remains unchanged. The United States Senate will not support the ratification of any treaty that does not include binding commitments by the developing nations in the same compliance period, or any treaty that will cause serious harm to the U.S. economy. That is the very least we expect.

Prepared Statement of Senator Feingold

Thank you Mr. Chairman, I wanted to have an opportunity to make a brief statement on the Kyoto Protocol and the subject of climate change.

In general, as do many other members of this Committee, I support the objective of reducing greenhouse gas emissions into the environment. In fact, in part due to my interests in climate change, I joined with my colleague from Wisconsin (Sen. Kohl) in introducing legislation (S. 1375) on November 5, 1997, to create a federal energy revolving fund or "energy bank."

When President Clinton announced his plan for meeting the challenge of global climate change on October 22, 1997, in preparation for the Bonn negotiating meetings on the Kyoto Protocol, among the items he cited was the need to do more in the area of federal energy management.

Aggressive energy management can reduce carbon emissions from the activities of the federal government, which, the President indicated, has the Nation's largest energy bill at almost \$8 billion per year. The President specifically stated that there is a need to improve federal procurement of energy efficient technologies, and the measure I introduced with my colleague from Wisconsin (Sen. Kohl) is a positive, proactive measure to ensure that federal agencies specifically set aside funds to achieve this goal. I also view such legislation as having the potential to benefit the country fiscally as we reap the benefits of reduced federal energy bills.

However, I find myself, as do other Committee members who did not have the benefit of accompanying the Administration to Kyoto, in a position of not yet knowing the full details of the impact of the Protocol on the country and, in particular, on Wisconsin.

This hearing, which will review for the Committee the evolution of the United States' negotiating position from stabilizing its emissions at 1990 levels to agreeing to a 7% reduction, is a first step in my developing that understanding. Some of the predictions that have been made regarding the impact of the Kyoto Protocol are very serious and concerning and they need to be addressed.

I look forward to the Administration's testimony on this matter and to future hearings on this topic. Thank you.

Prepared Statement of Hon. Stuart E. Eizenstat

Thank you, Mr. Chairman.

At the outset, let me thank those members of Congress, in this chamber and in the House of Representatives, who participated with us in the Kyoto Conference and who lent their advice and support to our efforts there. In particular I wish to thank Senators Hagel, Baucus, Chafee, Enzi, Kerry and Lieberman for taking the time to be present. I must also thank Senator Byrd, who could not be with us in Kyoto, for his interest and leadership. Rarely has there been an environmental issue more important or complex than global warming, and rarely has there been a greater need for the Executive Branch and the Congress to work closely together.

It is with great pleasure that I appear here today to explain the Administration's position on global warming. To this end, I will divide my testimony into four parts: (1) a short discussion of the science—the driving force for all the efforts we have taken to date to mitigate a significant and growing global environmental problem; (2) a discussion of the results of the recent Kyoto Conference and key features of the Kyoto Protocol; (3) an effort to correct misperceptions; and (4) a brief review of the President's Climate Change Technology Initiative. I hope to leave you with a clear understanding of why we believe that it is necessary to act, of how we intend to proceed internationally, and of what the President plans to do here at home.

The Science

Human beings are changing the climate by increasing the global concentrations of greenhouse gases such as carbon dioxide, methane and nitrous oxide. Burning coal, oil and natural gas to heat our homes, power our cars and illuminate our cities produces carbon dioxide and other greenhouse gases as by-products—more than 6 billion metric tons worth of carbon in the form of carbon dioxide annually. Similarly, deforestation and land clearing also release significant quantities of such gases—another 1 to 2 billion tons a year. Over the last century, greenhouse gases have been released to the atmosphere faster than natural processes can remove them. There is no ambiguity in the data; since 1860, concentrations of carbon dioxide have risen 30 percent, from 280 parts per million (ppm) to 365 ppm.

In December 1995, the authoritative Intergovernmental Panel on Climate Change (IPCC), representing the work of more than 2,000 of the world's leading climate change scientists from more than 50 countries, concluded that "the balance of evidence suggests that there is a discernible human influence on global climate."

The IPCC Assessment represents the best synthesis of the science of climate change. It concludes:

- Concentrations of greenhouse gases could exceed 700 ppm by 2100 under "business as usual"—levels not seen on the planet for 50 million years. The projected temperature increase of 2 to 6.5 degrees Fahrenheit over the next 100 years, could exceed rates of change for the last 10,000 years. For perspective, while there is some uncertainty, tropical sea surface temperatures in the last ice age were anywhere from 2 to 9 degrees Fahrenheit cooler than today.
- Increased temperatures are expected to speed up the global water cycle. Faster evaporation will lead to a drying of soils and in some areas increased drought. Overall, however, due to the faster global cycling of water, there will be an increase in precipitation.
- Sea levels are expected to rise between 6 and 37 inches over the next century. A 20 inch sea level rise could double the global population at risk from storm surges—from roughly 45 million to over 90 million, even if coastal populations do not increase. Low-lying areas are particularly vulnerable (e.g., much of coastal Louisiana and the Florida Everglades).
- Human health is likely to be affected. Warmer temperatures will increase the chances of heat waves (like the Chicago event in 1995 that killed over 400 people) and can exacerbate air quality problems such as smog, and lead to an increase in allergic disorders. Diseases that thrive in warmer climates, such as dengue fever, malaria, yellow fever, encephalitis, and cholera are likely to spread due to the expansion of the range of disease carrying organisms. By 2100, there could be an additional 50–80 million cases of malaria each year.
- Agriculture, forests, and natural ecosystems are also likely to be affected. The poorest countries, already subject to food production and distribution problems, will likely suffer the greatest agricultural impacts. Doubling current carbon dioxide concentrations could lead to a dramatic change in the geographic distribution of one-third of the Earth's forests. (For example, the ideal range of some North American forest species would shift by as much as 300 miles to the north in the next 100 years—far faster than their ability to migrate on their own.) Such changes could have profound effects on parks and wildlife refuges, and lead to a reduction in species diversity.

What Changes Have We Seen to Date?

The earth's temperature is increasing: Scientists from our National Oceanic and Atmospheric Administration (NOAA), the U.K. Meteorological Office and the National Aeronautics and Space Administration (NASA) all recently announced that 1997 was the warmest year on record. In fact, nine of the last 11 years are among the warmest ever recorded.

The water cycle of the planet may be speeding up: Since the beginning of the century, NOAA estimates that precipitation in the United States has increased by about 5–10 percent, while the frequency of heavy downpours (where more than 2 inches fall in a day) has increased by about 20 percent. The United States has had many recent reminders of how costly extreme events can be: the Mississippi flooding of 1993 led to damages of between \$10 and \$20 billion; the Southern Plains drought of 1996 was estimated to cost \$4 billion; and the Northwest floods of 1996–97 about \$3 billion. We have yet to learn what the current floods in California will cost. While no single event can be attributed to global warming, increases in floods and droughts are expected as global warming occurs.

Action Needed Now

Some have argued that we can wait to act until all the details of the climate system have been fully understood. The science tells us that this is a recipe for disaster. We will only fully confirm predictions when we experience them. At that point it will be too late. The concentrations of greenhouse gases in the atmosphere continue to rise each year, and because these gases will persist for many decades to centuries, this problem is only slowly reversed. The earth will continue to warm and the seas continue to rise as long as we continue to load the entire atmosphere of the earth with greenhouse gases. The problem has developed over the course of a century and it will take many decades to solve. Already, we have another 1.0 degree Fahrenheit of warming in the pipeline from emissions that have previously occurred, so some impacts will happen no matter what actions we take. Nevertheless, we can still forestall many others if we begin taking cost-effective actions now.

We should look at the Kyoto Protocol as an insurance policy against the potentially devastating and irreversible impacts of global warming. This insurance policy is fully justified today, based solely on our current understanding of the science. If we act now the premium will be far more reasonable than if we delay and hope the problem created by greenhouse gases will go away. It is like a life insurance policy whose costs grow significantly if we delay year after year insuring ourselves.

But there is a critical difference in the case of the climate system. In most insurance policies, the loser can be made whole—restitution is possible; the building can be rebuilt, the stolen car replaced, the fire or flood damage repaired. In the case of global warming, we will not have a second chance—failure to act will lead to irreversible consequences. We will be committing ourselves, our children and our grandchildren to a very different planet, and they will never forgive us.

But the premium for this insurance policy must be reasonable. For this reason we rejected unrealistic targets in Kyoto; we insisted on full recourse to market-mechanisms; and we opposed mandatory policies and measures—like carbon taxes.

The totality of our scientific information, including that on vulnerability and impacts of global warming, provides a compelling reason to act.

Let me now turn to the recent Kyoto Conference.

Kyoto Protocol

Last December in Kyoto, Japan, the nations of the world reached agreement on an historic step to control greenhouse gas emissions which cause global warming. No sooner had the negotiating session ended, however, than some critics on both ends of the political spectrum, without a full examination of the results achieved, denounced the agreement as either too little too late or too much too soon. In fact, the Kyoto Protocol, reached only through the exercise of vigorous American leadership, represents an important achievement in the best interests of the United States. But it is a framework for action, a work in progress, not a finished product ready for Senate consideration.

U.S. Negotiating Objectives

In order to secure an effective agreement that is environmentally strong and economically sound, while protecting the unique worldwide interests of the U.S. military, President Clinton and Vice President Gore established three major objectives. As a result of the Kyoto negotiations, we achieved the first two—realistic targets and timetables for reducing greenhouse gas emissions among the world's major industrial nations, which fully protect the unique role of our military in its global reach; and flexible market-based mechanisms for achieving those targets. The third, meaningful participation of developing countries, will be the focus of our work in the coming months and years, but with the Kyoto Protocol we have made an important down payment.

Elements of the Kyoto Protocol and Related Decisions

Our first objective—realistic targets and timetables among developed countries—had to be a credible step in reducing the dangerous buildup of greenhouse gases, yet measured enough to safeguard U.S. prosperity at home and competitiveness abroad. In the end, we secured the key elements of the President's proposal on targets and timetables, often over the initial objections of the European Union and other developed countries. The agreement and related decisions include:

- The U.S. concept of a multi-year time frame for emissions reductions rather than a fixed, single-year target. The multi-year time frame will allow the United States, other nations and our industries greater flexibility in meeting our targets. Averaging over five years, instead of requiring countries to meet a specific target each year, can lower costs, especially given an uncertain future. The averaging can smooth out the effects of short-term events such as fluctuations in the business cycle and energy demand, or hard winters and hot summers that would increase energy use and emissions.
- The U.S. specific time frame of 2008–2012, rather than earlier periods preferred by the European Union and others, giving us more time to phase in change gradually and deploy new technologies cost-effectively, and thereby to cushion the effects on our businesses and workers.
- Differentiated targets for the key industrial powers ranging from 6% to 8% below baseline levels (1990 and 1995) of greenhouse gas emissions, with the United States agreeing to a 7% reduction. When changes in the accounting rules for certain gases and offsets for activities that absorb carbon dioxide are factored in, the level of effort required of the United States is quite close to the President's original proposal to return emissions to 1990 levels by 2008–2012, representing at most a 3 percent real reduction below that proposal, and perhaps less.
- An innovative proposal shaped in part by the United States, allowing certain activities, such as planting trees, that absorb carbon dioxide—called "sinks"—to be offset against emissions targets. This will both promote cost-effective solutions to climate change and encourage good forestry practices. As a major forestry nation this will be of special benefit to the United States.
- As proposed by the United States, the Kyoto Protocol covers all six significant greenhouse gases even though the E.U. and Japan proposed and fought until the last moment to cover only three. This was an important environmental victory—also supported by many in our own industry—because gases that other countries wanted to omit and leave uncovered (including substitutes for the now banned chloro-fluorocarbons that endanger the ozone layer) are among the fastest growing and longest lasting greenhouse gases.

Flexible Market Mechanisms

Our second broad Presidential objective was to make sure that countries can use flexible market mechanisms to reach their targets rather than the mandatory "policies and measures," such as carbon taxes, favored by the E.U. and many other developed countries.

The Kyoto Protocol enshrines a centerpiece of this U.S. market-based approach—the opportunity for companies and countries to trade emissions permits. In this way, companies or countries can purchase less expensive emissions permits from companies or countries that have more permits than they need (because they have met their targets with room to spare). This is not only economically sensible, but environmentally sound. By finding the least expensive way to reduce emissions, we will be providing a strong incentive for achieving the maximum level of emissions reductions at the least cost. The United States has had a very positive experience with permit trading in the acid rain program, reducing costs by 50 percent from what was expected, yet fully serving our environmental goals.

This was a new concept for developed and developing countries alike—some of whom fought it vigorously. But we have it firmly enshrined in the Kyoto Protocol and it is a critical way of ensuring cost-effective solutions. Its inclusion was a major victory for us.

We went even further by achieving a conceptual understanding with several countries, including Australia, Canada, Japan, New Zealand, Russia and Ukraine, to trade emissions rights with each other. This 'umbrella group' could further reduce compliance costs.

Ensuring that we can meet our target reductions cost-effectively will depend significantly on access to the flexibility mechanisms we fought hard to include in the Kyoto Protocol. Let me be very clear: The commitment we made in Kyoto would not

have been made—could not have been made—were it not for the flexibility mechanisms that were also agreed there. Until we are satisfied with the rules and procedures yet to be established, the promise of Kyoto will never be realized.

Meaningful Participation of Developing Countries

Our third objective was to secure meaningful participation of key developing countries, a concern that the Senate obviously shares, as evidenced by last summer's Byrd-Hagel Resolution. Global warming is, after all, a global problem which requires a global solution—not only from the developed world but also from key developing countries.

Per capita emission rates are low in the developing world and will remain so for some time, and over 70 percent of today's atmospheric concentrations of greenhouse gases attributable to human activities are the result of emissions by the industrialized world. At the same time, it is also true that by around 2015 China will be the largest overall emitter of greenhouse gases, and by 2025 the developing world will emit more greenhouse gases in total than the developed world. So from an environmental perspective, this problem cannot be solved unless developing countries get on board.

We encountered significant resistance in Kyoto by some developing countries to meaningful participation in solving the global warming problem. For example, we had sought to include a specific process through which advanced developing or newly developed countries could take on quantified emission limitation commitments and thereby take part in the international emissions trading regime. While a number of developing countries expressed interest in our proposal and supported it in Kyoto, others rejected it, and it was not possible to include such a specific process in the Protocol. Still, developing countries may nevertheless, as a prerequisite for engaging in emissions trading, voluntarily assume binding emissions targets through amendment to the annex of the Protocol that lists countries with targets.

Some developing countries believe—wrongly—that the developed world is asking them to limit their capacity to industrialize, reduce poverty and raise their standard of living. We have made clear that we support an approach under which developing countries would continue to grow—but in a more environmentally sound and economically sustainable way, by taking advantage of technologies not available to countries that industrialized at an earlier time.

The Kyoto agreement does not meet our requirements for developing country participation. Nevertheless, a significant down payment was made in the form of a provision advanced by Brazil and backed by the United States and the Alliance of Small Island States. This provision defines a "Clean Development Mechanism," which embraces the U.S.-backed concept of "joint implementation with credit." The goal is to build a bridge—with incentives—between developed, industrialized countries, and developing nations. This new mechanism will allow companies in the developed world to invest in projects in countries in the developing world—such as the construction of high-tech, environmentally sound power plants—for the benefit of the parties in both worlds. The companies in the developed world will get emissions credits at lower costs than they could achieve at home, while countries in the developing world will share in those credits, and receive the kind of technology that can allow them to grow without ruining their environment.

The Clean Development Mechanism has great potential, but developing countries will need to do more in order to participate meaningfully in the effort to combat global warming. In determining what developing countries ought to do, we should be aware that the circumstances of developing countries vary widely, along a kind of continuum. Some today are very poor; their greenhouse gas emissions are negligible and are likely to remain so for the foreseeable future. Others, whose greenhouse gas emissions are not substantial, are relatively well off. Some are poor on a per capita basis, but their greenhouse gas emissions today rival or surpass those of the most advanced industrialized nations. Still others have already joined ranks with the industrialized world in the OECD but have not yet fully accepted the added responsibility for protection of the global environment that comes with their new status.

Any 'one-size-fits-all' approach to the 'meaningful participation of developing countries' and to satisfy the Byrd-Hagel Resolution is thus unlikely to prevail. We found in Kyoto that even among the industrialized countries it was necessary to recognize the individual national circumstances faced by those differently situated in order to reach agreement, notwithstanding our common purpose. Similarly, any uniform, inflexible approach to the 'meaningful participation of developing countries' is unlikely to prevail.

As Senator Byrd said in his letter of December 15, 1997, to the President, and recently restated on January 29 here in the Senate:

... binding commitments for developing nations should be paced according to the ability of each country to achieve greenhouse gas emission limitations appropriate to its national circumstances and economic growth. These limitations could be gradually implemented. Whether such commitments are in fact appropriate and represent best effort by each nation, will not be difficult to discern. As the saying goes, we will know it when we see it.

Recognizing our "common but differentiated responsibilities and respective capabilities" it will be necessary to develop an approach that provides for a meaningful global response to the threat of global warming, while acknowledging the legitimate aspirations of developing countries to achieve a better life for their peoples. To succeed, we will need to ensure that those responsible for a significant share of global emissions accept their responsibility to protect the global environment. We will also need to ensure that those who are able to do so contribute according to their capacities and stage of development.

Some Misperceptions

Before moving on, Mr. Chairman, let me address a few specific points on which I believe there may be some misperceptions. The first of these is that the Kyoto Protocol will damage our national security or imperil the ability of our military to meet its worldwide responsibilities—this is not true.

We took special pains working with the Defense Department and the uniformed military before and in Kyoto to protect the unique position of the United States as the world's only superpower with global military responsibilities. We achieved everything they outlined as necessary to protect military operations and our national security.

At the Kyoto Conference, the Parties took a decision to exempt key overseas military activities from emissions targets, including exemptions for "bunker fuels" (those used in international aviation and maritime transport) and for emissions resulting from a wide range of multilateral operations, such as peacekeeping and humanitarian relief. This exempts from our national targets not only multilateral operations expressly authorized by the U.N. Security Council (such as Desert Storm or Bosnia), but also multilateral operations that the United States initiates pursuant to the U.N. Charter without express authorization (such as Grenada). Countries may also decide among themselves how to account for emissions relating to multilateral operations (e.g., U.S. training in another NATO country) without going through emissions trading.

Second, it has been suggested that the Protocol will create a super U.N. Secretariat that will threaten U.S. sovereignty and national decision-making through alleged intrusive verification procedures and prior approval of individual emissions trades. That is not so. The review process contained in the Protocol largely codifies the existing practice under the 1992 Framework Convention, to which the United States is a Party. Under the Protocol, small expert review teams will continue to visit Annex I countries for brief periods to review implementation of the Convention and of the Protocol. The review process is intergovernmental, in that experts are nominated by governments. The review teams meet with government officials, and with others by invitation. In reviews under the Convention, the teams have met with Congressional staff, representatives of the private sector and representatives of environmental organizations—but only with their concurrence. Any other visits, such as site visits, would take place only if approved by the host country and, if the private sector is involved, the relevant interested persons. To date under the Convention, no site visits have taken place.

In addition, let me be unmistakably clear—while trading rules must be established internationally to have emissions trading work—as our SEC must set rules for equity trading—we will not accept nor do we anticipate an approach that would require prior approval of individual emissions trades by an international body. Trading will be done between interested nations and their companies, based on market principles.

Concerns have also been raised that the Protocol is flawed, on the one hand because it will threaten U.S. sovereignty by dictating national decisions on implementation and, on the other hand, because it lacks mechanisms to verify compliance. In fact we believe that the Protocol strikes an appropriate balance between these two extremes.

- The United States firmly opposed mandatory, harmonized policies and measures that would be imposed upon us in order to reach our target. We prevailed.

The Protocol leaves Parties entirely free to decide how best to meet their targets based on national circumstances.

- At the same time, we could not tolerate a free-for-all where Parties might or might not meet their commitments, particularly given the conscientious way the United States meets its international obligations. As a result, the Protocol calls for national measurement of emissions, detailed reporting, and in-depth reviews—on an intergovernmental basis.
- The one area where we believe more work needs to be done is in identifying appropriate consequences for non-compliance; the Protocol provides for elaborating such consequences, with any binding consequences to be done in amendment form, so that the Senate would have the opportunity to approve them.

Finally, some have suggested that the Protocol will result in a huge government transfer of foreign aid to Russia in which we will give away taxpayer money with no leverage on Russian policies with these funds. This also is not true. Under the Protocol's emissions trading provisions, we envision that U.S. private sector firms may choose to purchase international emissions credits in order to meet their emissions obligations. Indeed, the private purchase of emissions credits is one of the crucial ways to achieve cost-effective emissions reductions for U.S. firms.

As with any market transaction, purchases of these credits will have to comply with all U.S. legal and regulatory requirements. In addition, U.S. firms interested in international investment will have an incentive to ensure that other countries meet the international standards for adequate monitoring and reporting of their emissions of greenhouse gases. At the same time, Russia will have significant incentives to use the revenue generated to invest in the most modern, climate-friendly plants and equipment so that, as its economy recovers, it continues to produce emissions credits that it can sell on international markets.

Framework for Action

Where do we go from here? While historic, the Kyoto Protocol is only one step in a long process. It is, in essence, a framework for action, a work in progress, and a number of challenges still lie ahead.

Rules and procedures must be adopted to ensure that emissions trading rights, joint implementation and the Clean Development Mechanism operate efficiently and smoothly. The Kyoto Protocol establishes emissions trading, but leaves open the specifics of operations. We will work hard to ensure that the rules and procedures adopted enable emissions trading, joint implementation and the Clean Development Mechanism to work smoothly and efficiently, thereby encouraging the private sector to engage.

We will also work closely with our industries to be sure they are satisfied that the emissions trading system which is developed is as efficient and effective as possible to meet their needs.

Most significant, we must work to secure the meaningful participation of key developing countries. We must be creative in initiating bilateral agreements. We have made a promising start with an agreement we reached with China during last fall's Summit. We must also use regional and multilateral fora to achieve our objectives—such as the Summit of the Americas process, in the Asian Partnership for Economic Cooperation (APEC) process, the President's forthcoming trip to Africa, and the G-8 Summit in the United Kingdom. We will put on a full court diplomatic press to bring developing nations into a meaningful role in helping solve the global climate challenge. We will accept nothing less, nor would we expect the United States Senate to do so. As the President has indicated, the United States should not assume binding obligations under the Protocol until key developing countries meaningfully participate in meeting the challenge of climate change. Although the Kyoto Protocol was an historic step forward, more progress is necessary with respect to participation of key developing countries. It would be premature to submit the treaty to the Senate for its advice and consent to ratification at this time.

The Administration also plans to continue to work with the international financial institutions to promote market-based energy sector policies in developing countries that will help reduce developing country greenhouse gas emissions. Multilateral development bank policies, including those of the Global Environment Facility, strongly influence international lending and private capital flows for energy, industrial and transportation investments. Policies that favor market pricing, privatization, clean technologies and environmentally-friendly approaches will make implementing the Kyoto Protocol easier and will speed the growth of markets for new technologies that help reduce emissions in developing countries. We will work with the international financial institutions themselves—from the World Bank to the regional de-

velopment banks—and with other countries, especially developed countries, to achieve these goals in the coming years.

The Kyoto agreement does not solve the problem of global warming, but it represents an important step in dealing with a problem that we cannot wish away. A premature decision to reject the Protocol would deprive us of the opportunity to complete its unfinished business. If we fail to take reasoned action now, our children and grandchildren will pay the price.

Mr. Chairman, before turning briefly to our domestic efforts, let me note two other key elements in this equation—the contributions that the United States provides to carry out work under the U.N. Framework Convention on Climate Change and in the Intergovernmental Panel on Climate Change (IPCC), as well as the contributions that we make to the Global Environment Facility (GEF). For FY 1999, the President has requested \$314 million for the International Organizations and Programs Account, a level that represents a 6.6 percent increase over FY 1998. This amount includes \$8 million for the Climate Stabilization Fund which supports the Framework Convention and the IPCC. Parties to the Convention have much work ahead of them, as I have already noted. In addition, the IPCC has now embarked on its Third Assessment Report of Climate Change, scheduled for completion in late 2000 or early 2001. These funds are vital to ensuring U.S. leadership in both of these organizations and to ensuring that our views and the work of our scientists are taken fully into account.

In addition, the President has requested \$300 million to meet our past and current pledges to help fund the Global Environment Facility (GEF). The GEF helps developing countries act to protect the global environment in several key focal areas including international waters, biodiversity, climate change and depletion of the stratospheric ozone layer. If we want to bring developing countries on board with real commitments to limit greenhouse gas emissions, we need to demonstrate that we are a reliable partner by supporting their concrete efforts with reliable resources. At this point, our GEF shortfall damages U.S. credibility in promising to help developing countries meet the climate change obligations we are urging that they undertake. I would therefore urge the Congress to fund fully our \$300 million request, to meet our current pledge and also clear our substantial shortfall of nearly \$200 million.

President's Climate Change Technology Initiative

In his State of the Union address, President Clinton said that global warming is “the gathering crisis that requires worldwide action.” We need to begin now to launch the sensible, cost-effective efforts that will help us avoid the high future cost of inaction.

The President last October outlined a three-stage approach to addressing climate change at home. The first stage consists of immediate actions to stimulate development and use of technologies that can minimize the cost of meeting U.S. goals in reducing greenhouse gas emissions. Stage two will review options created through ongoing technology development and lead to detailed plans for a domestic, market-based permit trading system for carbon emissions. Stage three will begin to implement a market-based emissions-trading system.

As a first installment on this plan, President Clinton announced in his State of the Union message two weeks ago his proposal for a \$6.3 billion Climate Change Technology Initiative over five years to cut U.S. greenhouse gas emissions—\$1.3 billion higher than the President announced in his initial plan in October. This vigorous initiative calls for tax cuts coupled with research and development (R&D) to take cost-effective, practical steps that will position us well to meet the challenge we face early in the next century.

This initiative consists of two parts—\$3.6 billion in tax credits for energy-efficient purchases and renewable energy, and \$2.7 billion in new R&D spending over five years.

The tax package includes tax credits of \$3,000 to \$4,000 for consumers who purchase advanced technology, highly fuel efficient vehicles. It provides a 15 percent credit (up to \$2,000) for purchases of rooftop solar electricity and hot water systems to provide incentives for meeting the Million Solar Roofs goal. It also includes a 20 percent credit (subject to a cap) for purchasing energy-efficient building equipment, a \$2,000 credit for purchasing energy efficient new homes, extension of the wind and biomass tax credit, and a 10 percent investment credit for the purchase of combined heat and power systems.

The R&D component covers the four major carbon-emitting sectors of the economy (buildings, industry, transportation and electricity), plus carbon removal and sequestration, Federal facilities, and cross cutting analysis and research. Examples of

this R&D effort include the Partnership for a New Generation of Vehicles (PNGV), a government-industry effort to develop affordable cars that meet all applicable safety and environmental standards and get up to three times the fuel efficiency of today's cars. In 1999, the President's budget for PNGV is \$277 million, up from \$227 million appropriated for 1998. Our PNGV effort is clearly paying off—the developments about higher mileage cars announced by the Big Three last month were assisted by research supported under PNGV. It is exciting to see our U.S. auto makers already planning for the cars of the future, not as pipe dreams but as achievable greenhouse gas friendly products.

As General Motors Chair and CEO John F. Smith said recently in announcing GM's plans to step up research spending and focus on bringing new products to market, "No car company will be able to thrive in the 21st century if it relies solely on internal combustion engines." And as William C. Ford, Jr., Chair of Ford's Finance Committee, also said in announcing that Ford will join with Daimler-Benz of Germany in developing cars with fuel-cell engines, "There's a compelling business case to be made."

Similar government-industry efforts are proposed to develop cleaner, more efficient diesel engines for both light trucks and heavy trucks. The R&D effort also includes expanded research partnerships for key renewable technologies such as wind, photovoltaics, geothermal, biomass, and hydropower to accelerate price reductions and improve performance. The President's 1999 budget proposes a \$100 million increase in appropriations for solar and renewable energy R&D—a 37 percent increase over 1998.

We hope that the Congress will view the President's initiative favorably and appropriate the funds and enact the tax incentives that he has requested. We look forward to working with you to put the President's proposals into action.

The President and his Administration are committed to working with you in the Congress, both to realize the potential of the Climate Change Technology Initiative and to craft the ongoing U.S. approach to climate change. The United States has the power to lead the global effort, and Congress holds the key. What is done or not done today will determine the kind of world we will leave to future generations and the conditions of life they will face.

Sustained Effort Required

Mr. Chairman, I have mentioned that Kyoto produced a framework for future action, and I have listed a number of the steps that await us.

Coming to grips with the threat of global warming is no small task. We must tackle it in a vigorous, sober and determined manner, understanding that it represents a challenge but also an opportunity. And as we have always done in the face of global challenge, we must assume the responsibilities of American leadership.

Thank you.

Responses to Questions Submitted by Chairman Helms

Question. Please provide the official U.S. global greenhouse gas inventory used by negotiators in Kyoto, on a country-by-country specific basis, for the six greenhouse gases listed in Annex A of the Kyoto Protocol.

Answer. There was no official inventory of greenhouse gases for all countries used in Kyoto. The U.S. 1997 national communication "Climate Action Report" to the Framework Convention on Climate Change contains inventory figures used for the U.S. (Table 3-1). For other countries, there were a number of sources we drew upon for national totals, including individual countries' national communications, information from the U.S. Country Studies Program, and International Energy Agency analyses of carbon dioxide emissions derived from fuel use.

Question. Please provide the 1990 baseline and projections at least through 2030 for carbon dioxide, methane, and nitrous oxide.

Answer. For the U.S., carbon dioxide, methane, and nitrous oxide emissions through 2020 are reported in the 1997 U.S. national communication "Climate Action Report" to the Framework Convention on Climate Change (Table 3-1), which we have included as an attachment to these answers. Estimates beyond 2020 are not reported in the national communication, although IPCC long-term scenarios provide a set of alternative projections beyond 2020. For other countries, there were a number of sources we drew upon for national totals, including individual countries' national communications, information from the U.S. Country Studies Program, and

analysis from the International Energy Agency and the Energy Information Administration.

Question. Please provide the 1995 baseline and projections at least through 2030 for hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

Answer. For the U.S., hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride emissions through 2020 are reported in the 1997 U.S. national communication "Climate Action Report" to the Framework Convention on Climate Change (Table 3-1), which we have included as an attachment to these answers. Estimates beyond 2020 are not reported in the national communication, although IPCC long-term scenarios provide a set of alternative projections beyond 2020. For other countries, there were a number of sources we drew upon for national totals, including individual countries' national communications, information from the U.S. Country Studies Program, and analysis from the International Energy Agency and the Energy Information Administration.

Question. Please provide the assumptions, data and calculation methodology that support the Administration's assertion that the impact of carbon sinks on the U.S. greenhouse gas reduction commitment will reduce the actual reduction to 2 or 3 percent below 1990 levels, rather than 7 percent.

Answer. The Administration's proposal for reducing greenhouse gas emissions to 1990 levels between 2008-2012 included all sources and sinks, in both the baseline and the commitment period. Subsequent changes in baseline measurement and methodology explain the Administration's assertion that "the 7 percent target represents at most a 3 percent real reduction below the President's initial proposal of reducing greenhouse gases to 1990 levels by 2008-2012."

First, at the initiative of the U.S., the Protocol allows parties to apply their 1995 baselines for emissions of hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. This change accounts for about 1 percent of the difference in stringency (see the 1997 U.S. national communication, "Climate Action Report," for data on these three gases). Second, the Protocol does not include sinks in the baseline—though it does include afforestation, reforestation and deforestation in later years. Taken together, these changes in baseline measurement and methodology account for about 4 percent of the difference in stringency, leaving roughly a 3 percent real reduction below the President's original proposal.

Question. The Kyoto Protocol establishes a Clean Development Mechanism. What staffing and administrative costs do you anticipate will be required to establish and run this "Mechanism"?

Answer. The Clean Development Mechanism (CDM) provides a means through which industrialized and developing countries can establish partnerships to cut emissions in the developing world, to the benefit of both parties. The intent is to have the CDM operate through existing institutions, not to create new ones. The CDM begins with private sector investments in developing countries. We anticipate that there may be minor administrative costs associated with using the mechanism. Any transaction fee collected would be much like the commission collected by a stockbroker when buying or selling stock. Similar fees exist in the highly successful SO₂ permit trading system implemented to control acid rain in the U.S. As with other markets, participants in the CDM will have a built-in incentive to ensure that administrative costs are kept to a minimum.

Question. What fee do you anticipate the U.N. will charge companies for investing in developing countries through this "Mechanism"?

Answer. It has not been determined that the United Nations would play any role whatsoever in the Clean Development Mechanism (CDM). The CDM allows companies to invest in projects or to purchase certified emissions reductions outright. A small share of the proceeds will go to cover administrative expenses and help countries that are particularly vulnerable meet the costs of adaptation to climate change. We do not anticipate that the United Nations *pre se* will receive any funds from the CDM, unless a UN agency were to be selected as an operating entity.

Question. What criteria do you anticipate this "Mechanism" will use to approve or reject investments?

Answer. Emissions reductions obtained through the CDM must be verified as being real and additional, above reductions that would otherwise have occurred. The exact rules and guidelines for the acceptance, monitoring and verification of CDM projects will be worked out with the other Parties over the next year or so. The U.S. will push for a structure which ensures that reductions are real and additional,

while allowing as much flexibility as possible for participants in CDM project activities.

Question. The Energy Information Administration (EIA) has projected that carbon emissions in the United States will increase from 1990 emissions levels by 34 percent by the year 2010. The Kyoto Protocol would require the United States to *reduce* these emissions to 7 percent *below* 1990 levels by 2010. In addition to your assertions of increased energy efficiency, and international emissions trading, please detail how the Administration intends to reach these enormous commitments without constraining U.S. economic growth?

Answer. There are several ways in which U.S. energy efficiency will be improved, and costs will be reduced without constraining U.S. economic growth. These are discussed in detail in the attached testimony of Dr. Janet Yellen, Chair of the Council of Economic Advisors, on March 4, before the House Commerce Committee, and then before the Senate Agriculture Committee. These include the following: (1) international emissions trading among Annex I countries; (2) innovation and technology, spurred by the President's tax cut and R&D package; (3) in addition to increased energy efficiency and international emissions trading among Annex I countries, substantial cost reductions are possible if developing countries commit to quantitative targets enabling them also to participate in international emissions trading arrangements. Significant benefits should also accrue from the Clean Development Mechanism. A number of additional factors can also play a role in enabling the United States to meet its target without constraining economic growth? These include the use of carbon absorbing sinks to offset greenhouse gas emissions and the flexibility allowed by the Kyoto Protocol to meet the U.S. target through reductions in all six greenhouse gases and not just CO₂ alone. The President has also indicated his support for legislation to unleash competition in the electricity industry. Such legislation could lower electricity prices significantly for American consumers and also reduce greenhouse gas emissions.

Question. Regarding amendments to the Kyoto Protocol, while the Administration is calling the Kyoto protocol a "work in progress," isn't it true that the Kyoto Protocol is a final document that must be considered by all nations as is? Can the Protocol be amended or changed in any way before it enters into force? If so, how would this be done?

Answer. The President has made clear that the Protocol is a work in progress and that without more developing country involvement, he will not submit it to the Senate for advise and consent to ratification. Accordingly, we intend to take steps to ensure that our objectives are met, including meaningful participation by key developing countries. One method for achieving such progress is for the Conference of the Parties to adopt a further instrument, such as a supplementary protocol, which would be an integral part of the Kyoto Protocol and would enter into force at the same time as the Protocol. Further review and consultations with other governments would be necessary to determine what form and content of additional steps and documents would be feasible and desirable.

Question. Procedurally, how does the Administration intend to act on any proposals in Buenos Aires? For example, how would an emissions trading regime be considered and adopted? What about enforcement and compliance rules? What about new scheduled emissions reduction commitments by developing countries in the same compliance period as developed countries?

Answer. Most of the decisions called for in the Protocol must be made by the Protocol Parties, which can only happen once the Protocol has entered into force. With respect to such decisions, the meeting of the Convention's Conference of the Parties in Buenos Aires will be preparing such decisions, rather than making them. However, with respect to emissions trading rules, the Protocol assigns the taking of decisions to the Conference of the Parties; thus, decisions related to emissions trading could be taken at Buenos Aires (although they would become effective only upon entry into force of the Protocol).

Question. Please answer the following questions regarding the creation and implementation of a domestic emissions trading program:

Is the Administration considering the creation and implementation of a domestic emissions trading program?

Answer. The Administration supports emissions trading as one element in the implementation of a binding target once the Kyoto Protocol is ratified and enters into force. The Administration's approach to domestic emissions trading will, of course, reflect our concern for the Senate's constitutional role in advising and consenting to international treaties.

Question. Does the Administration believe that a domestic emissions trading program could be implemented absent legislation? Would legislation be required for any aspect of a domestic emission trading program under consideration? If you do not believe that legislation is required, under what statutory authority, specifically, would the Administration intend to proceed? What would be the basis for such an interpretation?

Answer. The Administration believes that new domestic legislation would be required to establish a comprehensive greenhouse gas emissions trading regime in order to meet our Kyoto Protocol commitments and looks forward to working with the appropriate committees in Congress shaping legislation at the appropriate time.

Question. Would a domestic emissions trading program be implemented without ratification of the Kyoto Protocol? If so, on what basis? How would such a program relate to the proposed, yet thus far undefined, international emissions trading regime?

Answer. The Kyoto Protocol does not limit national programs to mitigate climate change such as a domestic emissions trading initiative. The President has stated his support for a "cap and trade" system that would come at the end of a three-stage approach and not become effective before 2008. This strategy allows ample time for Senate advice and consent to ratification. In this process, we anticipate that any domestic emissions trading program would be crafted to facilitate participation in international emissions trading.

Question. Would a domestic emissions trading program be voluntary? If so, what incentives would be offered to induce companies and other entities to participate? Who would run such a program? Under what authority?

Answer. Under the acid rain program, firms are not required to participate in emissions trading, but may do so, on a voluntary basis, as a means of reducing their costs of compliance. We anticipate that any emissions trading for greenhouse gas would be designed in a similar manner. Operational aspects of an emissions trading program, including the administrative structure, presumably would be determined through authorizing legislation.

Question. By its very nature, an emissions trading program would require an emissions "cap" that would make an emissions unit tradable commodity. Would adherence to the cap be voluntary or mandatory? How would a cap be established? Has any Administration official or entity examined in any way whether a mandatory cap could be placed on carbon emissions? If so, would it be the Administration's view that legislation would be required to proceed? If not, under what authority would the Administration act?

Answer. Both theoretical models and previous experience suggest that a mandatory cap is required for emissions trading. Specific design issues would be worked out in the context of legislation which the Administration believes would be required for implementing any comprehensive emissions trading regime for greenhouse gases. Our goals would include designing a flexible trading system, in close consultation with Congress, the private sector and interested others.

Question. Could international emissions trading proceed today on the basis of the Kyoto Protocol? If so, how? If not, what would the Administration deem necessary for an international emissions trading program to proceed?

Answer. The concept of emissions trading is enshrined in Article 17 of the Protocol and our legal reading of the text leads us to believe that emissions trading can proceed. However, details to improve comparability and transparency and to guarantee flexibility and credibility remain to be worked out by the Parties.

Question. If the United States, or any other nation, sought to amend the Kyoto Protocol, wouldn't it need to follow the amendment process to the Protocol? To participate in that process, wouldn't the United States, or any other nation, have to be a party to the Protocol? If this is the case, how does the Administration intend to change anything that is now included in the Protocol or add anything to the Protocol—which is deemed a work in progress—until after U.S. ratification? If it is your belief that the United States does not have to be a party to the Protocol to amend the agreement, how could this be done?

Answer. After entry into force of the Protocol, Parties seeking to amend the Protocol would have to follow the amendment procedure set forth in Article 20. Participation in that process would require being a Party to the Protocol. As noted above, the considerations for adding elements to the Protocol *prior to* entry into force are different, and we are exploring the modalities for doing so.

Question. Would the Administration consider submitting the Kyoto Protocol to the Senate for its advice and consent *before* formal adoption of amendments to the Protocol? If not, is it the Administration's intention to forgo submitting a global climate treaty to the Senate? If so, how specifically would the Administration go about making the Protocol acceptable to the American people?

Answer. As noted above, we are exploring possible modalities for adding new elements to those contained in the Kyoto Protocol. The President has said that he will submit the Protocol to the Senate only after meaningful participation of key developing countries has been achieved.

Question. Is it the intention of the Administration to seek to negotiate a new Protocol and send both Protocols together to the Senate for advice and consent? If so, what would a new Protocol look like specifically? Have any other countries expressed an interest in such an approach? If so, which countries?

Answer. At this time, we do not have a proposal for a new instrument.

Responses to Questions Submitted by Senator Hagel

Question 1. When the Congressional delegation met with Vice President Gore in Kyoto, I asked the Vice President exactly what he meant when he called on you and the rest of the U.S. delegation to show more flexibility. The Vice President said that he would defer that question to you, but you were not at that meeting. Can you tell us exactly what instruction you received from the Vice President and what he meant when he instructed you to be more flexible in the negotiations?

Answer. The Vice President's visit advanced the negotiations by prompting all Parties to renew their efforts to find common ground. Earlier in the meeting, the U.S. signaled its openness to consider differentiated targets for developed countries. This move helped bring on board a number of critical countries and demonstrated that we were serious about obtaining a successful outcome in Kyoto. It would be inappropriate to discuss internal deliberations that led to modification of the U.S. position, but the Vice President's call for greater flexibility furthered the trust building process among our negotiating partners. We were able to convince them to focus on realistic targets and to include all six major greenhouse gases and carbon "sinks"—elements which they had previously opposed. In the end, the U.S. level of a 7% reduction in emissions actually represents at most a 3% real reduction below the President's initial proposal for stabilization of emissions at 1990 levels by 2008–2012 when different methods of accounting for the sinks and all six gases are factored in.

Question 2. Please define for me: "meaningful participation from key developing countries?"

Answer. Climate change is a global problem that requires a global solution. Current projections show that developing country emissions will surpass those from industrialized countries by 2030 or sooner. The problem of climate change cannot be solved unless developing countries take measures themselves to limit greenhouse gas emissions.

In determining what developing countries ought to do, we should be aware that the circumstances of developing countries vary widely, along a kind of continuum. Some today are very poor; their greenhouse gas emissions are negligible and are likely to remain so for the foreseeable future. Others, whose greenhouse gas emissions are not substantial, are relatively well off. Some are poor on a per capita basis, but their greenhouse gas emissions today rival or surpass those of the advanced industrialized nations. Still others have already joined ranks with the industrialized world in the OECD but have not yet fully accepted the added responsibility for protection of the global environment that comes with their new status.

We found in Kyoto that even among the industrialized countries it was necessary to recognize the individual national circumstances faced by those differently situated in order to reach agreement, notwithstanding our common purpose. Similarly, any uniform, inflexible approach to the 'meaningful participation of developing countries' is unlikely to prevail.

The U.S. will be working bilaterally, regionally, and multilaterally in the coming months and years to promote more active efforts by developing countries to limit their emissions. We will concentrate on key developing countries and on approaches that are consistent with the economic growth and development of these countries and with other environmental objectives. We will not submit the Kyoto Protocol to the Senate for advice and consent to ratification until we believe we also have achieved meaningful participation from key players in the developing world.

Question 2.1. What countries do you define as “key?” Do you consider China a “key” developing country? Do you consider India a “key” developing country?

Answer. The term “developing country” encompasses a wide range of nations which are at various stages of industrialization and contribute differently to global emissions. Accordingly, there is no one-size-fits-all approach to measuring developing country participation. Clearly, a country with per capita high GNP or one that emits a proportionally large share of global emissions should be expected to do more than one that is poor or whose emissions are negligible. China and India, in terms of their contributions to global emissions, the size of their populations and their rates of economic growth, are clearly key countries in the effort to control global greenhouse gas emissions.

Question 3. The Administration’s position on the issue of developing country participation has been much weaker than that unanimously urged by the Senate in Senate Resolution 98. The President has called for “key” developing countries to participate in a “meaningful” way, while the unanimous view of the Senate was that “the United States should not be a signatory to any protocol which would mandate new commitments to limit or reduce greenhouse gas emissions for the Annex I Parties, unless the protocol or other agreement also mandates new specific scheduled commitments to limit or reduce greenhouse gas emissions for the Developing Country Parties within the same compliance period.” Why did the Administration use a different standard than that voted unanimously by the Senate?

Answer. The Administration has sought to move forward internationally to deal with the threat of global warming. In this regard, the Kyoto Protocol represents an important achievement—for the first time, industrialized countries have agreed to legally binding commitments to limit or reduce their emissions of greenhouse gases, and the Kyoto Protocol contains important provisions that will enable them to do so cost-effectively, including emissions trading and joint implementation. In addition, the Protocol contains provisions that are pertinent to developing countries. For example, it requires all Parties, including developing country Parties, to advance the implementation of their existing commitments under the Framework Convention. The Protocol’s Clean Development Mechanism will also promote cooperative projects between industrialized and developing countries designed to limit emissions in developing countries. And developing countries may take on quantified emissions limitations commitments under the protocol’s amendment procedure that will enable them to participate in emissions trading with industrialized countries. But these elements alone do not amount to the meaningful participation that the President has called for as a prerequisite for submission of the Protocol to the Senate for approval. More must be done to bring key developing countries more fully into the global response to climate change.

Question 3.1. Does the Administration intend to adhere to the letter of S. Res. 98 that is to negotiate legally-binding, specific new scheduled commitments within the same compliance period for the Developing Country Parties currently left out of the Kyoto Protocol?

Answer. The Administration will not submit the Protocol to the Senate for ratification until there is meaningful participation by key developing countries. Requiring such participation by developing countries was the intention of Senate Resolution 98—an intention the Administration shares.

Question 3.2. At what point, specifically, will the Administration reconsider the viability of the Kyoto Protocol if emission reduction commitments cannot be secured from the Developing Country Parties?

Answer. Many issues concerning the Kyoto Protocol remain to be worked out, and these include the participation of the developing countries. The U.S. will continue to work bilaterally, regionally, and multilaterally in the coming months and years to promote more active efforts by developing countries to limit their emissions. We must recognize that the term “developing country” encompasses a wide range of nations which are at various stages of industrialization and make varied contributions to global emissions. We are developing a diplomatic strategy which will concentrate on key countries and on approaches that are consistent with the economic growth and development of these countries and with other health and environmental objectives. The President has made clear that without the participation of these countries, whose emissions will pass those of the industrialized nations within several decades, it is impossible to develop a successful global solution to climate change. We will not submit the Kyoto Protocol to the Senate for advice and consent to ratification until there is meaningful participation from key players in the developing world.

Question 3.3. Does the President intend to honor the unanimous request of the Senate not to be a signatory—that is not to sign the Protocol—until we have met both objectives of the Byrd-Hagel resolution test: emission reduction commitments from the Developing Country Parties and a demonstration that the Protocol will not seriously harm the U.S. economy?

Answer. The Administration intends to sign the Kyoto Protocol within the one-year period beginning on March 16, 1998, that it will remain open for signature. The specific timing will depend on an assessment of when it is most opportune to do so based on tactical considerations. The Protocol would not become binding on the United States, however, until it is ratified and proclaimed by the President following advice and consent by the Senate. The President has indicated that he will not submit the Protocol to the Senate for its advice and consent until we have achieved more meaningful participation from key developing countries.

Question 4. Does the FY 99 budget contain any programs or budget requests that could have the effect of implementing portions of the Kyoto Protocol? Please provide the Committee with a list of all climate change programs in the Executive Branch, with a description of each program and how they relate to the Kyoto Protocol

Answer. The FY 1999 budget does not contain any programs or budget requests to implement the Kyoto Protocol. The FY 1999 budget is consistent with the policies announced by the President on October 22, 1997, to address climate change through immediate actions to stimulate the development and use of energy efficient and low-carbon technologies. Many of the programs in the FY 1999 budget initiative were established to carry out responsibilities under the Energy Policy Act of 1992 and other major statutes, not the Kyoto Protocol. There are additional voluntary programs under the Climate Change Action Plan that have been in place since 1993 or 1994. Besides reducing greenhouse gases, these programs produce substantial benefits for the Nation—both now and in the future—in terms of greater energy efficiency, economic growth, increased national security, a cleaner environment, and more job opportunities for American workers.

Attached is a Report to Congress on Federal Climate Change Expenditures pursuant to Section 580 of Public Law 105-118, Foreign Operations, Export Financing, and Related Agencies Appropriations Act of FY 1998. The programs discussed in this report are most directly related to global climate change. Also attached are briefing materials on the climate change initiative included in the FY 1999 budget. The Administration will not seek to impose binding restrictions on U.S. business before the U.S. Senate ratifies the Kyoto Protocol.

Question 5. Article 3 calls for the U.N. Subsidiary Body for Scientific and Technological Advice to report within a year on which additional activities should be regulated by the treaty. What specific additional domestic U.S. economic activities do you believe should be brought under the jurisdiction of the Kyoto Protocol?

Answer. None.

Question 6. Article 5 calls on countries to enhance their monitoring systems of greenhouse gas emissions. Will the Administration make any changes in our existing monitoring systems prior to Senate ratification of the treaty?

Answer. We already maintain a continuous emissions monitoring system for carbon dioxide emissions from utility boilers, as required under the Clean Air Act Amendments of 1990. To meet our existing commitments under the Framework Convention on Climate Change, the U.S. maintains a thorough and comprehensive system for monitoring emissions and sequestration of greenhouse gases. The U.S. has also led efforts to improve the guidelines for international reporting of greenhouse gas inventory information. We will continue to further refine and develop our methodologies and data and to press other countries to improve their methods, data, and inventory estimates as well.

Question 7. Article 6 delays the implementation of any international emissions trading system among industrial countries until some later U.N. conference establishes procedures for verification and reporting. Do you believe that a fully functioning trading system will, in fact, be adopted next November in Buenos Aires?

Answer. The Kyoto Protocol established a right to trade, and we believe parties can begin to trade at anytime. However, for a trading system to function well, rules and guidelines will need to be established. In the coming months leading to Buenos Aires, the Parties to the FCCC will continue their work to define the "relevant principles, modalities, rules and guidelines" for emissions trading. We anticipate this process to be complex, but the Administration will build upon and share with other Parties our experience with the successful domestic SO₂ (acid rain) emissions trading program in developing verifiable domestic and international trading regimes. We

are optimistic that significant progress on the structure of a functioning trading system can be made by Buenos Aires.

Question 8. Article 11 requires the industrial countries to “provide new and additional financial resources” to developing countries. What exactly does this mean, in terms of the U.S. budget?

Answer. Article 11 simply restates the preexisting obligation of Annex II Parties (which includes the United States) under Article 4.3 of the Framework Convention. Under Article 4.3, Annex II Parties are to provide new and additional financial resources:

- to meet the agreed *full* costs incurred by developing country Parties of complying with reporting-related obligations; and
- to meet the agreed full *incremental* costs of implementing measures that are covered under Article 4.1 of the Convention and that are agreed to by the international entity operating the financial mechanism (i.e., the GEF).

Article 11 of the Protocol identifies which commitments in that Article are reporting-related (and thus qualify for full funding) and which implement other aspects of Article 4.1 of the Convention (and thus qualify for incremental cost funding).

The U.S. already fulfills these obligations through its participation in and contribution to the Global Environmental Facility (GEF), which helps developing countries act to protect the global environment, and through the U.S. Country Studies Program, which assists developing countries to inventory their greenhouse gas emissions, assess their vulnerabilities to climate change, and develop policies and measures to mitigate and adapt to climate change, and through various other programs, including those of the U.S. Agency for International Development.

Because Article 11 of the Kyoto Protocol only restates an existing obligation, it is not expected to have any increased impact on the U.S. budget.

Question 8.1. Does the Administration plan to implement this requirement of the Kyoto Protocol before Senate ratification?

Answer. The Administration will implement its obligations under the Convention, which already exist and pre-date the Kyoto Protocol. This does not circumvent the Senate’s constitutional authority to ratify Kyoto before its binding requirements can come into force.

Question 9. Article 12 creates a new U.N. foreign aid fund on the climate change issue. This is the “Clean Development Mechanism.” This Article creates a new U.N. structure for the transfer funds from industrial to developing nations. It would permit industrial countries or companies to pay into a fund that would, in turn, pay for projects in developing nations to achieve “sustainable development” and to reduce greenhouse gas emissions beyond what they would otherwise be. Article 12 also contains language that would permit the U.N. Clean Development Mechanism to retain a portion of the funds it receives for its own administrative purposes. Early versions of this Brazilian proposal forthrightly referred to this as “user fee” authority, a form of U.N. taxation authority. Does the Administration have any concerns about granting this kind of fee retention authority to a U.N. body?

Answer. The Clean Development Mechanism (CDM) is *not* part of the UN, nor is it a “structure”, nor is it a “fund”. The CDM builds on a U.S. proposal called joint implementation—designed in coordination with U.S. businesses, allowing cost-effective emissions reductions by facilitating private sector investment in clean technologies. The CDM begins with private sector investments in developing countries. We anticipate that there may be minor administrative transaction costs associated with using the mechanism. Any transaction fee collected would be much like the commission collected by a stockbroker when buying or selling stock. Private brokers charge similar fees for the transactions they facilitate under the highly successful SO₂ permit trading system implemented to control acid rain in the U.S. Beyond covering the costs of administrative expenses, which we expect to be minor, and assisting particularly vulnerable countries with costs of adaptation, the Kyoto Protocol proposes no other assessment of costs with respect to the CDM. The CDM is expected to provide attractive new opportunities for U.S. firms by enabling them to share in the greenhouse gas emissions reductions achieved as a result of energy efficiency, clean technology or carbon sequestration projects in developing countries.

Question 10. Last year, the Administration abandoned a year and a half-long effort to develop an economic model that would show that we could make major cuts in energy use in this country without harming our economy. The Chair of the Council of Economic Advisors went so far as to call economic modeling “futile.” On February 4, 1998 the Chair of the Council on Environmental Quality, Kathleen McGinty said before the House Science Committee, “The Administration is working

on a more detailed economic analysis of the impact of the targets reached in Kyoto. Council of Economic Advisers Chair Janet Yellen will be prepared to discuss the analysis at a hearing next week before the Senate Foreign Relations Committee." Can you tell me why the Administration did not produce either Janet Yellen as a witness or the promised detailed economic model or analysis?

Answer. Dr. Yellen was unable to complete preparation of testimony by the Committee's hearing deadline because of her obligations associated with the release of the 1998 Economic Report of the President. Dr. Yellen did testify before the House Commerce Committee on Wednesday, March 4 and the Senate Agriculture Committee on Thursday, March 5 on the Administration's economic analysis.

Question 11. Were you involved in developing the statement of the Administration's climate change policies announced by the President in his October 22, 1997 speech at the National Geographic Society, and, if you were, will you please describe for us the role you played?

Answer. I was not directly involved in the drafting. However, I was heavily involved in policy discussions at the White House and the State Department regarding development of the Administration's position on global climate change.

Question 11.1. When were you told that you would be head of the U.S. delegation at the third session of the Conference of the Parties to the United Nations Framework Convention on Climate Change; and who told you?

Answer. I was a regular participant in high-level discussions at the White House and the State Department regarding our preparations for Kyoto. I was asked by senior Administration officials about three weeks before I left for Kyoto to lead the U.S. delegation, building upon my regular participation in interagency discussions on this issue.

Question 11.2. Will you please describe for us the role you played in developing the Administration's policy approach to, and strategies concerning, the international climate change negotiations during the period between the President's October 22 speech and the first day you arrived at the Kyoto Conference?

Answer. I was for part of this period a regular Department of State representative to interagency discussions. Of course, given my position, I contributed to the foreign policy aspects of the U.S. climate change strategy, including the diplomatic strategy.

Question 11.3. At the Kyoto Conference, you were the head of the U.S. delegation. Will you please describe the role you played in developing the Administration's policy approach to, and strategies concerning, the international climate change negotiations in Kyoto; and, in doing so, will you please describe on a comparative basis the decision making authority within the delegation of you, Ms. Kathleen McGinty, and Mr. Todd Stern?

Answer. I served as head of the U.S. delegation and relied heavily on the advice and counsel of all members of the delegation including Mr. Stern and Ms. McGinty. As you know from your own time in Kyoto, negotiating this Protocol required an extraordinary amount of work, and I relied on Mr. Stern and Ms. McGinty, with support from an excellent interagency technical team, to help me pull together all of the diplomatic, public affairs, and outreach aspects of our work. I deployed our team to deal with discrete issues, like sinks and emissions trading; briefed our Congressional delegation on a regular basis; helped develop our negotiating strategy; negotiated directly with representatives from the European Union and Japan on targets, timetables, trading rights and other issues; helped organize the non-EU umbrella group of countries and dealt with representatives of the G-77 countries.

Question 12. In his testimony last fall before the House Commerce Committee, former Under Secretary of State Wirth referred to the Administration's "economics team" in response to Committee questions about economics issues relevant to the international climate change negotiations. Prior to your appointment as head of the U.S. delegation for the Kyoto Conference, did you regard yourself as part of the Administration's "economics team" with respect to the international climate-change negotiations?

Answer. As a regular participant in interagency discussions on various aspects of climate change and Kyoto, I represented the Department of State's perspective, including international economic and political dimensions.

Question 12.1. From and after the time you were appointed head of the U.S. delegation, was there an "economics team" concerning the international climate-change negotiations, and, if there was, who were its members and who headed the "economics team?"

Answer. The delegation relied heavily on the economic expertise of the various economic agencies in the Executive Branch. Rather than being a single "team", various agencies have participated in these internal deliberations—the Council of Economic Advisers, the National Economic Council, Treasury, Commerce Department, Energy Department, etc. Agency representatives included Deputy Treasury Secretary Larry Sumners, and Dr. Janet Yellen and Jeff Frankel of the Council of Economic Advisors.

Question 12.2. Is there currently in place any interagency body within the Executive Branch that has the responsibility to analyze the economic implications to the nation of the emissions-reduction requirements specified in the Kyoto Protocol for the United States and of alternative domestic policies to achieve those reduction requirements?

Answer. As I have said, there is not a single agency, but rather several competent departments that work together on analysis, depending on the issue. The Council of Economic Advisors has done the Administration's major economic analysis, presented to the Congress on March 4.

Question 12.3. If yes, what is the name of that interagency body? Who is the chair of that body? Are you a member of that body?

Answer. The National Economic Council regularly convened various agencies to consider the economic implications to Kyoto and to arrive at major policy decisions.

Question 13. You were appointed head of the U.S. delegation at the Kyoto Conference after former Under Secretary of State Wirth announced his intention to resign as Under Secretary for Global Affairs. The President has not yet sent to the Senate his nomination of a successor to Mr. Wirth. Are you currently proceeding on the assumption that, unless and until you are informed by the Secretary of State or the White House to the contrary, you are the senior State Department official who has immediate responsibility for the Administration's policy approach to, and strategies concerning, international climate-change negotiations?

Answer. I continue to play a leading role within the Department and in the formulation of our climate change policy, relying on the fine expertise of our professionals in the environmental and economic areas. It has not been determined who will take the lead if a new Under Secretary for Global Affairs is confirmed.

Question 13.1. What is your current assumption about whether you or Mr. Wirth's successor, if and when confirmed by the Senate, will head the U.S. delegation at the fourth session of the Conference of the Parties when it meets in Buenos Aires in November?

Answer. Please see previous answer.

I expect to continue to play a significant role for the foreseeable future. The Department will review the composition of our team for the Conference of the Parties meeting in Buenos Aires this November, as that time approaches.

Question 14. In his October 22, 1997 speech at the National Geographic Society, the President said: "First, the United States proposes at Kyoto that we commit to the binding and realistic target of returning to emissions of 1990 levels between 2008 and 2012. And we should not stop there. We should commit to reduce emissions below 1990 levels in the five-year period thereafter, and we must work toward further reductions in the years ahead." As of the time you arrived at the Kyoto Conference, or at any time during the Kyoto Conference, were you informed of:

Question 14.1. What the President's October proposal would require of the United States in terms of the tons of carbon-equivalent emissions reductions.

Answer. Yes, in a general sense.

Question 14.1.1. What domestic laws and regulations likely would be required to enable the United States to abide by the President's October proposal.

Answer. No. We did not get to this level of detail. The President indicated in October that he favored an emissions trading system between 2008–2012 as a key element of his proposal, but the details of that system have not yet been elaborated. Of course, as we seek to build the rules and guidelines for an effective international trading system and as we work to secure the meaningful participation of key developing countries, we are also looking forward to working with the Congress on measures we can take at home, including full funding of the President's Climate Change Technology Initiative and enactment of the tax incentives included in the FY 1999 budget.

Question 14.1.2. What the economic consequences to the nation likely would be if the President's October proposal were the basis for a protocol?

Answer. Yes. Our proposals for emissions trading and joint implementation will help ensure that emissions can be reduced in the most cost-effective manner, consistent with the President's commitment to economic growth and environmental protection.

Question 14.2. For any affirmative response to any of the above questions:

Question 14.2.1. Who gave you that information, and when?

Answer. The inter-agency process and groups convened on a regular basis in various fora in which I participated before and during the Kyoto Conference.

Question 14.2.2. Please tell us what portions of the information were in written form, by way of briefing papers or otherwise, including any notes you made of information that was given to you?

Answer. As part of the interagency process, I received oral briefings, reviewed written memoranda, and participated in meetings that addressed the projected level of effort that would be required to meet the President's proposal and the likely economic consequences. It is impossible to reconstruct what portions were in written form.

Question 14.2.3. To the extent the information to which I have referred was not given to you in written form or reflected in any notes you made of the information given to you, would you please tell the Committee:

Question 14.2.3.1. What the President's October proposal would require of the United States in terms of the tons of carbon-equivalent emissions reduction.

Answer. At numerous meetings and policy discussions, we established a notional level of effort that would be required to meet the President's proposal, representing significant reductions below the business-as-usual projections for emissions. We anticipated that reductions in greenhouse gas emissions roughly equivalent to 30 percent from business-as-usual projections would be necessary to meet our targets on the Kyoto Protocol. However, some of these reductions could be achieved through international emissions trading, carbon sinks, joint implementation projects, and the Clean Development Mechanism.

Question 14.2.3.2. What domestic laws and regulations likely would be required to enable the United States to abide by the President's October proposal; and

Answer. To the best of my knowledge, we do not have a specific analysis of laws and regulations required to meet the President's objectives. We are prepared to work intensively with Congress to formulate them at the appropriate time.

Question 14.2.3.3. What the economic consequences to the nation likely would be if the President's October proposal were the basis for a protocol?

Answer. I was not provided with a full-blown economic analysis but received indications that flexible, market-based mechanisms would ensure that the Protocol would be implemented in the most cost-effective manner if elements of the President's proposal (e.g., emissions trading and joint implementation) were included in the final text.

Question 14.3. Prior to your leaving for the Kyoto Conference was it your understanding that the President's October proposal for emissions "targets and timetables" presupposed that a protocol would provide for emissions trading among Annex I Parties and for "joint implementation" among and between Annex I and non-Annex I Parties?

Answer. Yes. The emissions targets in the President's Climate Change Initiative announced in October, and our participation in the Kyoto agreement, were dependent on the inclusion of international emissions trading and the joint implementation concept in the Kyoto Protocol.

Question 14.4. Prior to your leaving for the Kyoto Conference, what was your belief as to how difficult it would be for the United States to achieve the emissions limitation that was proposed in the President's October speech, assuming a protocol provided for emissions trading among Annex I Parties and for "joint implementation" among and between Annex I and non-Annex I Parties?

Answer. We believed this goal would take real effort, but that these flexible market-based mechanisms would be critical in allowing the most cost-effective reductions and creating incentives for investment in clean technologies, ensuring sustainable development and continued economic prosperity.

Question 15. As you know, the Kyoto Protocol, if it ever were to become binding on the United States, would require our nation to reduce its emissions of greenhouse gases by 7 percent below their 1990 levels during the period 2008 through 2012, all in accordance with the specific provisions of the Protocol concerning the list of greenhouse gases, sinks, baseline dates, and so forth. I refer you to a document entitled "Fact Sheet: The Kyoto Protocol on Climate Change," dated January 23, 1998. It states that it was prepared by the Department of State's Bureau of Oceans and International Environmental and Scientific Affairs. Did you, personally, approve issuance of that "Fact Sheet" and, if you did not, who was the highest ranking official of the State Department who approved its issuance?

Answer. As Under Secretary of State, I stand behind the material produced for the public and by the Department, whether or not I have personally approved every detail. The fact sheet you mention, while it may have been prepared by a particular bureau, is a publication of the Department. I do not specifically recall whether I approved this, but I am confident of the customary diligent work of our career professionals.

Question 15.1. The State Department's "Fact Sheet" states: "The 7 percent target represents at most a 3 percent real reduction below the President's initial proposal of reducing greenhouse gases to 1990 levels by 2008–12. The remaining 4 percentage points result from certain changes in the way gases and sinks are calculated and do not reflect any increase in effort as compared to the President's original proposal." The document then goes on to attribute one percentage point of the 4 percentage points to changing the baseline from 1990 to 1995 for the three synthetic gases covered by the Kyoto Protocol ("FCs, PFCs, and SF₆"). It further attributes "about 3" percentage points of the 4 percentage points to not including in the 1990 baseline U.S. sinks, but including certain changes in sinks during the period 2008 through 2012. Was an analysis, which showed that the Kyoto Protocol involves "at most a 3 percent real reduction" of U.S. greenhouse gas emissions below 1990 levels furnished to you while you were in Kyoto and before you agreed to the 7 percent reduction figure; and, if so:

- Who prepared the analysis?
- Who furnished you the analysis, and when?
- Were you given or shown any such analysis in writing?

Answer. Yes. Analyses of the effects of the various proposals on sinks and the three synthetic gases were undertaken during negotiations by the U.S. delegation, with assistance from the Administration's economic experts in Washington. The negotiations on sinks and the basket of gases were particularly complex, as numerous proposals were considered. These analyses were done in real time, as negotiations were occurring.

The elimination of the requirement of a 1990 sinks base in factoring in changes in the "net changes in sinks" in the budget period was less restrictive and allowed us to be more flexible in establishing an emissions reduction target. Likewise, the move of the synthetic gases baseline to 1995 also gave us increased flexibility.

Question 15.2. Please tell us which other nations—at the time of the Kyoto Conference, but before actual adoption of the Kyoto Protocol—were informed, either by you or by any other member of the U.S. delegation, that the Kyoto Protocol, as finally proposed to be adopted by the Kyoto Conference, would entail at most a 3 percent real reduction of U.S. greenhouse gas emissions below 1990 levels?

- Was Chairman Estrada of the Committee of the Whole informed of that; and, if so, when?
- Were any member nations of the European Union informed of that; and, if so, which ones and when?
- Were any developing nations, including, but not limited to, China, India, Argentina, Brazil, or any member nation of the Alliance of Small Island States informed of that; and, if so, which ones and when?

Answer. The Chairman of the Committee of the Whole and other nations fully recognized that differences in accounting procedures for sinks and the inclusion of the synthetic gases would mean different results for the U.S. target, as well as the targets of other countries. Indeed, the different accounting procedures affected many of these countries' own targets. These effects were widely known, and were factored into other countries' decisions as we prepared to agree on differentiated targets. During my negotiations with the European Union and Japan this was explained.

Question 16. Article 3.1 of the Kyoto Protocol states that the emissions reduction requirements of the Annex I Parties set forth in Annex B to the Protocol, in accordance with the provisions of Article 3, are "with a view to reducing their overall emissions of such gases by at least 5 per cent below 1990 levels in the commitment pe-

riod 2008 to 2012.” My recollection is that Ambassador Estrada, who chaired the AGBM and the Committee of the Whole, stated that the reduction of the Annex I Parties would amount to about 5.2 percent below 1990 levels. If the “real” reductions or limitations of the Annex I Parties are calculated in the same manner as the proposed U.S. reduction is calculated in the State Department’s “Fact Sheet”—in other words, taking into account the 1995 baseline for the three synthetic gases and the provisions regarding sinks—shouldn’t we conclude that the “real” reductions of the Annex I Parties below 1990 emissions levels will be less than 5 percent?

Answer. No.

Question 16.1. Putting it another way, if the U.S. reduction is “at most a 3 percent real reduction” below 1990 levels, that would be less than one-half of the 7 percent proposed reduction for our nation set forth in Annex B to the Kyoto Protocol. I understand that the United States accounted for perhaps as much as one-third or more of the Annex I Parties’ gross emissions in 1990; Russia (the next largest Annex I emitter of greenhouse gases), as well as New Zealand and Ukraine, refused to agree to any reductions below their respective 1990 emissions levels; and Australia would be allowed to increase its emissions by 8 percent over its 1990 level. In these circumstances, can you explain how the aggregate reductions of the Annex I Parties during the period 2012 through 2018 will achieve the 5 percent reduction level referred to in Article 3.1 of the Kyoto Protocol?

Answer. The 5 percent reduction below 1990 levels is real. The inclusion of sinks and the three synthetic gases in the emissions accounting produced a different accounting structure for national reduction targets. The structure used in the Kyoto Protocol is that proposed by the U.S., and is more environmentally comprehensive because it covers six instead of three gases and provides for the protection of forest sinks. Each nation’s target in the Kyoto Protocol is based on the calculation structure adopted in the Protocol. The U.S. target, for example, is seven percent below the 1990 level under that calculation, while the European Union’s target is eight percent below 1990 levels. What the State Department fact sheet accurately states is that the U.S. reduction is “at most a three percent real reduction below the President’s initial proposal.” The point is that the U.S. dropped no more than three percent in real terms below what the President announced. Though Australia is allowed to increase its greenhouse gas emissions, due to its particular demographic and economic growth projections, Australia only generates about 1.2% of the world’s total carbon emissions. The overall reduction goal for Annex B Parties is 5.2 percent below 1990 levels.

Question 16.2. As far as the Administration is concerned, is the phrase “with a view to reducing their overall emissions of such gases by at least 5 per cent below 1990 levels in the commitment period 2008 to 2012,” as set forth in Article 3.1 of the Kyoto Protocol, anything more than a purely political statement; or, could it in any manner be interpreted as placing on the United States a legal obligation over and above the 7 percent reduction set forth in Annex B, when interpreted in accordance with the balance of Article 3 without regard to that phrase?

Answer. The United States ensured that the phrase was not written in mandatory terms, because, *inter alia*, the figure of 5% below 1990 levels does not take account of the ability of Annex I Parties to increase their allowed emissions through the Clean Development Mechanism.

Question 17. The fact sheets and related documents that were distributed by the White House, along with the text of the President’s October speech, stated with respect to the emissions target and timetable he had announced: “And it is meaningful. Achieving 1990 levels in the period 2008–12 would amount to almost a 30 percent reduction off a business-as-usual approach.” Even assuming, for the sake of our discussion, that the 7 percent reduction referred to in Annex B of the Kyoto Protocol amounts to “at most a 3 percent real reduction” below 1990 levels, would you please:

Question 17.1. Tell the Committee how many millions of tons of reduction will have to occur in 2012 (the last year of the first commitment period) compared to the baseline emissions projections for that year.

Answer. We do not have specific estimates of emissions for 2012. One could compare the 1990/1995 baseline to business-as-usual projections for 2010 (see, for example, the U.S. National Communication for 1997 and other USG publications), to generate an estimate of potential reductions, but this would misstate the effects of the Protocol on U.S. emissions. First, U.S. firms can gain credit for actions taken overseas through international emissions trading, joint implementation and the Clean Development Mechanism. Second, the Protocol provides opportunities for offsets,

through afforestation and reforestation. Third, the Protocol provides opportunities for “smoothing” variations in annual emissions over a multi-year commitment period (2008–2012).

Question 17.1.1. Explain why the Administration agreed in Kyoto to a legally binding obligation to reduce our greenhouse gas emissions by such amount below 1990 levels during the period 2008 through 2012?

Answer. Global climate change threatens the economic and environmental security of all countries. The severity of this threat, and the global nature of greenhouse gases, necessitate international action. The clear commitments being undertaken by other members of the international community presented an unprecedented opportunity to address climate change cooperatively that we did not wish to discard. Accordingly, after close consultation with the President and Vice President, the U.S. delegation reached agreement with other Parties on the package of elements that formed the Kyoto Protocol. The combination of these elements allowed us to take on a target more ambitious than the one initially elaborated in the President’s October 22nd proposal. Of course, this target does not become legally binding on the United States until the Protocol enters into force. Ultimately, a serious international effort to address climate change will limit costs to the United States.

Question 17.2. Given the provisions in the Kyoto Protocol concerning the baseline for the three synthetic gases and the provisions regarding sinks, if the U.S. delegation had insisted at the Kyoto Conference on percentage figures in Annex B to the Protocol that would have resulted, in reality, in a U.S. commitment only to return its greenhouse gas emissions to their 1990 level, rather than the 3 percent reduction claimed in the State Department’s “Fact Sheet,” please tell us, based on your discussions with other nations, which of them, if any, would have formally objected to adoption of such a protocol?

Answer. The text that became the Kyoto Protocol was a package that reflected the day-to-day progress of the negotiations. As countries neared consensus on various elements of this package, negotiations on other elements were affected. Within this dynamic, inter-related series of negotiations, it is impossible to predict with any certainty which, if any, nations might have objected to such a U.S. stance. The final agreement reflected significant mutual compromise by many delegations, including the U.S., Japan, and the EU, the latter of which assumed a more stringent target than the United States.

Question 18. Article 3.2 of the Kyoto Protocol states: “Each Party included in Annex I shall, by 2005, have made demonstrable progress in achieving its commitments under this Protocol” Does this constitute a legally-binding obligation?

Answer. Yes, when the Protocol enters into force.

Question 18.1. Will you please tell us what that provision means in terms of the relationship between U.S. greenhouse gas emissions in 2005 and

- The baseline projection of U.S. emissions for 2005 and
- U.S. greenhouse gas emissions in 1990?

Answer. The provision does not mean anything in particular concerning the relationship between U.S. emissions in 2005 and projected emissions for 2005 or emissions in 1990. Rather, with respect to this provision, the United States made clear that it would be in compliance with such a provision if it had the necessary implementing legislation in place to meet its target during the 2008–2012 commitment period. The United States would only become a Party to the Protocol with the necessary domestic legislation in place.

Question 18.2. Does the Conference of the Parties to the Kyoto Protocol have the authority to determine whether the United States is in compliance with Article 3.2; and, if it does, would our nation be exposed to risk of enforcement provisions that might be established pursuant to Article 17 of the Protocol?

Answer. The Parties have yet to establish procedures for determining when a Party is not in compliance or consequences for such non-compliance. However, any enforcement or compliance procedures entailing binding consequences can only, as provided in Article 18, be adopted by means of an amendment to the Protocol, and the United States would only be bound to those consequences if it agreed to such an amendment.

Question 19. In his October speech, the President said there should be reductions below 1990 levels during the five-year period after 2012. Either before or during the Kyoto Conference, did you or any other member of the Executive Branch ever propose to, or discuss with another nation what the percentage reduction should be during the five-year period after 2012? If yes—

- What percentage reduction was proposed or discussed for that second commitment period;
- Who expressed the view of the United States on that issue;
- When such further reduction was proposed or discussed;
- Who the other nations were; and
- What their reaction was?

Answer. A variety of nations had proposals for commitments during a second budget period, and these were discussed with the U.S. delegation in bilateral and multilateral fora during the Kyoto Conference. The U.S. did not propose any specific longer-term numerical reductions to take place during a second five-year budget period or beyond. However, the President said in the October 22nd announcement of his Climate Change Policy that the U.S. will undertake additional reductions in a second five-year budget period.

Question 19.1. As nearly as I can determine, there are two places in the Kyoto Protocol that define the first “commitment period.” Article 3.1 uses the expression “the commitment period 2008 to 2012,” and Article 3.7 uses the identical expression. I am concerned that the word “to” could be interpreted by some to mean “up to,” rather than “through”, so that the language in the Kyoto Protocol would be interpreted to refer to the years 2008, 2009, 2010, and 2011—that is, “up to” 2012. Such interpretation would mean that the first commitment period has a duration of only four years. Was it the intention and understanding of the U.S. delegation at the Kyoto Conference that the phrase “the commitment period 2008 to 2012,” as used in the Kyoto Protocol, was meant to include the full year 2012?

Answer. Yes, the phrase “the commitment period 2008 to 2012” includes the full year 2012. Indeed, Article 3.7, which defines the initial assigned amount for a Party, provides for the baseline level of emissions to be multiplied by the percentage in Annex B, and then multiplied by *five*. This would not make sense if the commitment period only included four years.

Question 20. Even if one assumes that the Kyoto Protocol provides for at most a real 3 percent reduction of U.S. greenhouse gas emissions below their 1990 levels during the period 2008 through 2012, would you agree that, all other things being equal, the level of effort required to enable U.S. compliance with that commitment would have to be greater or more far-reaching than would be the case if the Protocol only required, under its provisions, returning the nation’s emissions to their 1990 level, and, also, that the economic consequences would be greater?

Answer. Yes.

Question 20.1. During the decision-making process as to whether the U.S. delegation should agree to the Kyoto Protocol, as it finally was to be proposed to the Kyoto Conference, did you participate in any discussions, or receive any information, concerning whether, or how, or the extent to which, domestic laws and regulations that would be required, and the economic consequences to the nation, would or could differ from those contemplated at the time of the President’s October 1997 speech?

Answer. I received information regarding the relationship between the Kyoto Protocol and the U.S. economy but was not informed regarding the role of domestic laws and regulation. We consulted with our economic experts in determining the soundness of our negotiating position in Kyoto. We have not yet conducted an assessment of domestic laws and regulations but we look forward to working with the Congress at the appropriate time.

Question 20.1.1. If you answered yes to the above, was any such information furnished to you in written form; and, if so, who prepared the information, and who furnished it to you?

Answer. No, except for quick analyses done on the spot of the economic impact of various options we were considering, I received oral briefings from members of the U.S. delegation.

Question 20.1.2. Would you please describe for the Committee what was said during any discussions you had on that issue?

Answer. It would be inappropriate to characterize specific positions taken by specific officials in the Executive Branch as part of the deliberative process. However, CEA Chairman Yellen gave extensive answers to numerous questions regarding the Administration’s economic analysis at the March 4 and March 5 hearings. I refer you to her testimony and the transcripts from these hearings.

Question 20.1.3. Would you please tell us whether the President or the Vice President, or both, were provided the information that you had?

Answer. While we consulted closely with the White House during the Kyoto negotiations, I have no specific knowledge as to whether they were provided with exactly the same information that I was given.

Question 21. As you know, Senate Resolution 98, the Byrd-Hagel Sense of the Senate Resolution, provided, in part, that "the United States should not be a signatory to any protocol to, or other agreement regarding, the United Nations Framework Convention on Climate Change of 1992, at negotiations in Kyoto in December 1997, or thereafter, which would—(A) mandate new commitments to limit or reduce greenhouse gas emissions for the annex I Parties, unless the protocol or other agreement also mandates new specified scheduled commitments to limit or reduce greenhouse gas emissions for Developing country Parties within the same compliance period. ..." Please tell the Committee what efforts were made by the United States, from and after the time you were told you would head the U.S. delegation at the Kyoto Conference, to obtain language in the Kyoto Protocol that met the *specific* requirements of Senate Resolution 98, namely, that "mandates new specified scheduled commitments to limit or reduce greenhouse gas emissions for Developing Country Parties within the same compliance period" as would apply to our nation?

Answer. In negotiations and numerous bilateral meetings throughout the eleven days of the Kyoto Conference, we, in coordination with our allies, vigorously attempted to persuade developing countries to take on additional commitments within the Kyoto Protocol. Our bilateral discussions with developing countries included, for example, meetings with China, Mexico, India and Brazil. We frequently consulted with other Annex I countries to develop a coordinated approach to developing country participation. In the closing days of the negotiations, these discussions took place around the clock. The foundations for our work in Kyoto on developing country participation were laid in numerous bilateral meetings with developing and industrialized countries, and in various multilateral fora, including the OECD and the G-8, in which we extensively pursued cooperation with other Annex I countries on this issue. These efforts, while not achieving all of our goals, bore fruit in the form of developing country support for essential elements of the U.S. position in Kyoto, including their advocacy for the Clean Development Mechanism. As I have said repeatedly, this is a down payment only, and we continue to seek meaningful participation by key developing countries. I worked the Hagel-Byrd resolution frequently in Kyoto.

Question 21.1. In the President's October speech, he stated: "The United States will not assume binding obligations unless key developing nations meaningfully participate in this effort" In his December 8 speech to the Kyoto Conference, one of the specific conditions stated by the Vice President to show "increased negotiating flexibility" also was "the meaningful participation of key developing countries." At any time, were you under the impression that such language met the requirements set forth in the Senate Resolution that was adopted by a vote of 95 to zero? If yes—

Answer. Yes, we believe such participation would meet the spirit of the commitments set forth in the Resolution. Developing countries vary in many characteristics which affect their ability to participate in global action on climate change. We did not expect that Chad, for example, would be able to participate in the same way as, say, Singapore or Israel. The actions taken by developing countries will to a large extent determine the long-term success of our efforts to mitigate global climate change. Building on the commitments made by developed and developing countries at Kyoto, the U.S. will continue to work bilaterally, regionally, and multilaterally in the coming months and years to promote more active efforts by developing countries to limit their emissions.

Question 21.1.1. What, if anything, made you think that Senate Resolution 98 was only concerned with "key" developing nations, as distinguished from all, or substantially all, of them?

Answer. The Senate in Resolution 98 made clear that an effective solution to climate change must involve more than just the industrialized countries, and this Administration has devoted its full efforts to achieving that goal. The intention always has been that developing countries should take on binding commitments to limit their greenhouse gas emissions. Our efforts to effect this and other actions by developing countries support the spirit of Senate Resolution 98.

Moreover, meaningful participation by key developing countries would capture, by far, the vast majority of future greenhouse gas emissions in the developed world. Surely we should not hold-up the prospect of commitments by such countries to participation by countries that have minuscule effects on the climate change problem.

Question 21.1.2. What, if anything, made you think that the expression “meaningful participation” was exactly the same thing as the requirement of Senate Resolution 98 that referred to “new specified scheduled commitments to limit or reduce greenhouse gas emissions for the Developing country Parties within the same compliance period?”

Answer. They are not exactly the same thing. The interpretation meets the spirit of Senate Resolution 98, that developing countries play a meaningful and important role in combating the serious problem of climate change. We are actively seeking explicit mechanisms by which developing nations will be able to fulfill that key role.

The recent economic crisis in Asia has highlighted one of the difficulties of establishing scheduled emissions reductions commitments for developing countries. Not only do these countries vary considerably in their emissions growth projections, but these projections are highly sensitive to unpredictable economic events.

Question 21.2. Do you agree that the Kyoto Protocol, as written, does not meet the requirements of the Senate, as set forth in Senate Resolution 98?

Answer. Yes, in and of itself.

Question 22. As of, or around, the time you were designated to head the U.S. delegation to the Kyoto Conference, what was your understanding of the intention and meaning of the following words, as used in the President's October speech:

- “key”—Please name all of the developing nations that were “key?”
- “participation”—did it include quantitative commitments, in the Protocol or in a simultaneously adopted, but separate, protocol, to limit the growth of developing nations’ greenhouse gas emissions?
- “meaningful”—what did that mean?

Answer. At the time I was designated to head the U.S. delegation, we had not specifically identified a list of key developing countries. Obviously, developing countries vary greatly in their stages of industrialization, their greenhouse gas emissions profiles and other characteristics relating to their ability to mitigate global climate change. Thus, some countries may be found to be more critical than others in participating in a global effort to combat climate change. We are now in the process of developing a diplomatic strategy of next steps, one of which will be to identify those countries who are most critical to our efforts to control global climate change. Meaningful participation by these countries could include quantitative commitments. The U.S. worked hard to ensure that developing countries would have the opportunity to take on such commitments within the structure of the Kyoto Protocol, and we will continue to work bilaterally and multilaterally to involve developing countries.

Question 22.1. My understanding is that the Annex I nations and the developing nations knew of the terms of Senate Resolution 98 at least by the summer of 1997, when the Ad Hoc Group on the Berlin Mandate met in Bonn. Is that your understanding also?

Answer. Yes. Other nations knew about this Resolution, and in some cases, had the opportunity to hear about it directly from Senate staff members who attended the Ad Hoc Group on the Berlin Mandate meetings in Bonn last summer.

Question 23. At any time during the Kyoto Conference, did the Administration’s intent and understanding of the phrase “meaningful participation of key developing nations” change from the intent and understanding that existed as of the President’s October speech? If so, would you please tell us what the changes were?

Answer. All of the fundamental precepts of our position remained consistent throughout the negotiations.

Question 24. Does the Kyoto Protocol, as written, provide for “meaningful participation of key developing countries” within the meaning of the President’s October 1997 speech?

Answer. No.

Question 24.1. The following is from a document, dated December 11, 1997, which is entitled “Transcript: Eizenstat Briefing on Results of Climate Talks” and which bears a legend at the top stating “The United States Mission to Italy.” The document purports to be a transcript of your news conference on December 11 in Kyoto. The following statement is attributed to you:

Second is the question of eventual ratification by the U.S. Senate. The President has indicated that the United States would not take on legally binding targets until there was meaningful participation by developing countries. Clearly, despite the very important step taken through the Bra-

zilian process of creating a Clean Development Mechanism for Credit, that meaningful participation has not yet been taken as a result of the steps that were done here. We hope, over time, they will.

Did that transcript accurately set forth what you said at your news conference?
Answer. Yes.

Question 24.2. If anybody in the Administration, or anybody else, ever tries to tell or suggest to this Committee that the Kyoto Protocol, as written, provides for “meaningful participation by key developing countries,” can we count on you to deny that?

Answer. We have stated clearly that the Protocol does not, at this time, meet the President’s requirement for meaningful participation by key developing countries. In our view, we expect additional engagement by developing countries to meet the objectives of the Framework Convention on Climate Change and to satisfy the Administration’s desires for meaningful participation on the part of developing countries. We are working actively to find ways to encourage such engagement, which we think is fully consistent with sustainable growth and development. One of our biggest challenges in attaining developing countries’ participation is that developing countries, here simply defined in the Kyoto Protocol context as those countries not included in Annex B, encompass a wide range of national circumstances. These countries vary tremendously in their wealth; population; stage and pattern of development; geographical characteristics; political, legal, economic, and industrial structures; energy consumption patterns; and environmental policies, as well as a wide range of cultural factors that affect and are affected by all of the above. It is important for us to recognize that not all developing countries are uniform; some may be acting more aggressively than others to combat global climate change.

Question 25. The State Department’s “Fact Sheet: The Kyoto Protocol on Climate Change,” dated January 23, 1998 states (beginning at the bottom of page 4): “While the conference rejected a proposal to create a new category of nations that would voluntarily assume binding emissions targets, developing countries may as a prerequisite for engaging in emission trading still do so through an amendment to the annex of the protocol that lists countries with targets.” Does that statement mean that there is a mechanism for developing nations to opt into the Kyoto Protocol by means of amendment to Annex B?

Answer. Yes.

Question 25.1. Was the United States, before and during the Kyoto Conference, a proponent of what had been called Article 10, which was called Article 9 in a subsequent draft because of renumbering of the Articles, and that Article 10 was intended to set forth the rules by which a non-Annex I Party (that is, a developing nation) could “opt in” to a quantitative commitment to limit reduce its greenhouse gas emissions?

Answer. Yes.

Question 25.2. Is it true that the developing nations, as a group, refused to go along with this “Article 10,” and that, in your press conference immediately after adoption of the Protocol, you stated that the defeat of the opt-in provisions of Article 10 “was I think our single greatest disappointment?”

Answer. Yes, we were disappointed that the broader provision on voluntary participation was not adopted. We were able to get a significant down-payment from developing countries in their support for the Clean Development Mechanism (CDM), and their support for other essential parts of the U.S. position. More specifically, the Protocol promotes investment in projects in developing countries which can offset emissions in developed countries (through the CDM) The Protocol also strengthens all Parties’ national communications requirements and gives advanced developing countries the option of adopting an emissions budget and trading under the Protocol—potentially providing even more direct investment and technology transfer than the project-based CDM. More work, of course, remains, particularly on gaining the meaningful participation of developing countries, and we will make bilateral and multilateral efforts to this end.

We are now vigorously pursuing a diplomatic strategy to do exactly that.

Question 25.3. Who came up with the idea that Annex B could be amended so as to add a developing nation and a related emissions-limitation commitment, or when such idea first entered into a draft of the Protocol?

Answer. Mexico proposed that the phrase “Annex I” in the emissions trading article be changed to “Annex B”, and this proposal was supported by other countries.

Question 25.4. Do you believe that a majority of the developing nations wanted to include Article 10 in the Kyoto Protocol?

Answer. No.

Question 25.5. If a “developing” nation wanted to undertake an emissions-limitation commitment for itself and that it proposed to amend Annex B of the Kyoto Protocol by stating what its commitment was, do you agree that, by reason of Articles 20.7 and 19.3 of the Protocol, such amendment would first have to be approved by at least a three-fourths majority vote of the Parties to the Protocol?

Answer. Yes.

Question 25.6. Do you believe that the Government of the United States, under our Constitution, could not deposit an instrument of acceptance to any amendment of Annex B pursuant to Article 19.4 of the Kyoto Protocol without the advice and consent of the U.S. Senate?

Answer. Seeking Senate advice and consent is the route that is currently anticipated for amendments to Annex B pursuant to Article 20.4 (the former Article 19.4), given the provisions of the Kyoto Protocol.

Question 25.7. If a developing nation were added to Annex B, would it automatically become an Annex I Party to the Convention?

Answer. No. The term “Party included in Annex I” is defined in Article 1.7 of the Protocol and provides the exclusive basis upon which a Party may become an Annex I Party to the Convention.

Question 25.8. Would a developing nation that is added to Annex B also undertake the commitments of Annex I Parties set forth in Article 2 (concerning policies and measures), Article 5 (concerning a national system for estimation of its emissions and sinks), Article 7 (concerning its national emissions inventory and national communications), and Article 8 (concerning expert review of its reports filed pursuant to Article 7)? If yes—

Answer. No, not automatically. Developing countries, however, like other Parties to the Framework Convention on Climate Change, do have requirements under the Convention to publish greenhouse gas emissions inventories and programs containing measures to mitigate climate change.

Question 25.8.1. Will you please look at those Articles in the Kyoto Protocol and tell me what language in them would make them applicable to a developing nation that became listed in Annex B?

Answer. Not applicable in light of answer above.

Question 26. In her written testimony before the House Science Committee on February 4, Ms. Kathleen McGinty said: “The President has made it clear that he does not intend to send the Kyoto Protocol to the Senate for ratification until we have achieved meaningful participation by key developing countries.” Is that also your understanding of the President’s position; and, if it is, who told you that?

Answer. Yes. I have been informed of that position by the President’s policy advisors.

Question 27. I am told that various Administration officials have referred to efforts to obtain, on a bilateral or multilateral basis, the agreement of certain developing nations to quantitative limitations on the growth of their greenhouse gas emissions. For example, I understand that Ms. McGinty indicated that in her oral testimony before the House Science Committee. Is it the Administration’s position that any such bilateral or multilateral agreements would constitute “meaningful participation by developing nations?”

Answer. Bilateral or multilateral agreements that support the objectives of the Framework Convention and the Kyoto Protocol are highly desirable. Whether any such agreements would contribute to a determination of “meaningful participation by developing nations” would depend on which nations were Party to these agreements and on the specific provisions of such agreements.

Question 27.1. How could the Administration contend that bilateral or multilateral agreements with developing nations would justify the Senate’s ratification of the Kyoto Protocol, in the absence of amendments to the Kyoto Protocol that made it *certain* the developing nations added to Annex B also were subject to Articles 2, 3, 5, 7, and 8, and that all such commitments, including those undertaken by means of joining Annex B, were subject to such enforcement provisions as might be adopted to elaborate Article 17?

Answer. There are a variety of different agreements or arrangements that could, in principle, play a part in a determination that a given country was participating meaningfully in the global effort to reduce greenhouse gases. It would not be productive at this time to rule out any particular form of agreement. The most important thing would be the substantive commitments undertaken by the parties in question.

Question 27.2. Is the Administration contemplating proposals to amend the Kyoto Protocol to make certain that, if developing nations were added to Annex B, they also will be subject to Articles 2, 3, 5, 7, and 8?

Answer. The Administration is still evaluating what steps to take with respect to the Protocol. Among the options we are exploring are the legal possibilities of amending the Protocol before it enters into force.

Question 28. What do you believe the chances are that the Kyoto Protocol will enter into force by the fourth session of the Conference of the Parties in November if the Senate has not ratified it more than 90 days before that session?

Answer. None.

Question 29. If the Kyoto Protocol does not enter into force by the November session of the Conference of the Parties, do you believe that the Protocol's provisions concerning amendment of the Protocol are irrelevant and that, in the absence of adoption of the Rules of Procedure of the Conference of the Parties that provide for amendment of the Kyoto Protocol by something other than "consensus," any amendments to that Protocol would require "consensus?"

Answer. The Protocol's provisions concerning amendment of the Protocol would not apply before the Protocol enters into force. While the Protocol cannot, strictly speaking, be "amended" before it enters into force, it may be possible for the Conference of the Parties to adopt a further instrument, such as a supplementary protocol, which would be an integral part of the Kyoto Protocol and would enter into force at the same time as the Protocol. Further review and consultations with other governments would be necessary to determine if such a route were desirable and, if so, what form and content would be feasible.

Question 30. Would you please describe for us all of the ways, including procedure, that the State Department is considering to accommodate the requirements of Senate Resolution 98?

Answer. Climate change is a global problem that requires a global solution. Current projections show that developing country emissions will surpass those from industrialized countries by 2025 or sooner. The problem of climate change cannot be solved unless developing countries take measures themselves to limit greenhouse gas emissions.

The U.S. will be working bilaterally, regionally, and multilaterally in the coming months and years to promote more active efforts by developing countries to limit their emissions. We will concentrate on key countries and on approaches that are consistent with the economic growth and development of these countries and with other environmental objectives. We will not submit the Kyoto Protocol to the Senate for advice and consent to ratification until there is meaningful participation from key players in the developing world.

Question 31. Did the President, personally, authorize the U.S. delegation at the Kyoto Conference to vote for adoption of the Kyoto Protocol?

Answer. As chief of delegation, I frequently consulted with the White House as to the degree of my negotiating authority and I joined the consensus to adopt the Kyoto Protocol on that basis. I was told that my actions had the President's approval.

Question 31.1. Will you please explain to the Committee why the President authorized the U.S. delegation to vote for adoption of the Kyoto Protocol at the Kyoto Conference, but no decision has been made as to when it will be signed in behalf of the United States?

Answer. We would expect to sign during the year the Protocol remains open for signature. Given that many issues remain in negotiation, we would plan to sign when it is tactically advantageous for us to do so.

Question 32. Will you please identify and describe any oral or written understandings with, or commitments to, other nations—of any kind other than those specifically set forth in the Protocol—which were made by the President, by the Vice President, or by any member of the U.S. delegation to the Kyoto Conference, including, but not limited to, any understandings or commitments regarding:

- Implementation or the interpretation of the Protocol;
- The substance of future decisions by the Conference of the Parties, which the United States would support, regarding rules or guidelines elaborating the Protocol; or concerning the timing of any Party's signature or ratification of the Protocol.

Answer. As you know, the Vice President came to Kyoto not to negotiate, but to demonstrate U.S. support for the Kyoto Conference, and to explain to other governments the strength of the U.S. proposal. Neither the President nor the Vice President nor I entered into any understandings or made any commitments with other countries regarding implementation of the Protocol, future decisions by the Conference of the Parties, or the timing of any Party's signature or ratification of the Protocol.

Question 33. Article 16 bis. Will you please tell us what "modalities" would be, as distinguished from the "principles," "rules," and "guidelines" referred to in that Article?

Answer. The term "modalities" is generally used to refer to the mechanics of how a regime will work, as opposed to the substantive "rules" that will apply.

Question 33.1. Do you believe that, until the Conference of the Parties makes all of the decisions that it is empowered to make under those Articles of the Kyoto Protocol, it will be impossible for either the Administration or the Congress to know the extent to which those Articles—in reality—would or could reduce the nation's cost of complying with the emissions-reduction requirement set forth in the Protocol?

Answer. The Kyoto Protocol establishes international trading of emissions rights among Annex I countries. The Administration's policy is to secure rules that ensure an effective international market for emissions rights. It is impossible to know *exactly* the magnitude of the cost reduction associated with international trading, because of many uncertainties. Some of these uncertainties will be addressed in subsequent negotiations; however, many uncertainties are associated with the inability precisely to predict the state of the U.S. and global economies a decade or more from now. It is possible to draw from the economic literature on trading, and descriptive statistics of Annex I economies, and to use the results from modeling exercises to illustrate the substantial gains possible through international trading. The finding that effective international trading can significantly reduce compliance costs is quite robust—and consistent with actual experience in our domestic SO₂ trading regime.

Question 34. Do you believe that under Article 16 bis, Annex B Parties can begin engaging in emissions trading now?

Answer. The Kyoto Protocol established a right to trade, and we believe Parties can begin to trade at anytime. In order to ensure that emissions trading is fully and effectively utilized, however, rules and guidelines will be needed as they are to facilitate the integrity of any market. In the coming months leading to Buenos Aires, the Parties to the FCCC will continue their work to define the "relevant principles, modalities, rules and guidelines" for emissions trading. We anticipate this process to be complex, but the Administration will build upon and share with other Parties our experience with the successful SO₂ emissions trading program in developing verifiable domestic and international trading regimes. We are hopeful that significant progress on the structure of a functioning trading system can be made by Buenos Aires.

Question 34.1. Do you have any reason to believe that other Parties to the Convention, specifically including the European Union, agree that, under Article 16 bis, Annex B Parties can begin engaging in emissions trading before the Conference of the Parties defines what it regards as the "relevant principles, modalities, rules and guidelines" for emissions trading, as provided for in the first sentence of Article 16 bis?

Answer. Yes. Other parties, however, generally share our view that rules and guidelines are needed to facilitate a comprehensive and effective market for emissions trading.

Question 34.2. Will you please explain to the Committee, in summary form at this time, all of the issues that will have to be decided by the Conference of the Parties in order to enable emissions trading under Article 16 bis be a viable and effective mechanism for reducing the costs of complying with the emissions-reduction commitment of the United States under the Kyoto Protocol?

Answer. We are currently working on a strategy to address the as-yet undefined issues in the design of the emissions trading system. Among the issues likely to be

addressed are questions of who can trade; systems for monitoring and verification; rules for compliance and enforcement; and coordination with domestic trading regimes. The rules and procedures for the international emissions trading regime are to be considered at the Fourth Conference of the Parties (COP-4) in Buenos Aires, Argentina this coming November. Until COP-4, we will work hard to build a consensus on the structure of an emissions trading regime which provides the greatest flexibility for our private sector and domestic implementation.

Question 35. Regarding the Clean Development Mechanism, particularly Article 12.8, which states: "The Conference of the Parties serving as the meeting of the Parties to this Protocol shall ensure that a share of the proceeds from certified project activities is used to cover administrative expenses as well as to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation." Who are those countries that will be entitled to receive funding to meet the costs of adaptation?

- Are they limited to the groups of countries referred to in Article 4.8 of the Convention?
- Will the share of proceeds to be used to meet the costs of adaptation be allocated among deserving nations in accordance with some currently unknown, decision making process to be established by the Conference of the Parties?
- Please identify all countries that would be excluded from receiving any portion of such funding.

Answer. The Conference of Parties will determine which countries are particularly vulnerable to the adverse effects of climate change. The U.S. believes that this category should be limited to countries which are vulnerable to changes in climate, and that it should not include countries demanding compensation for loss of income resulting from international efforts to mitigate climate change (e.g., through reductions in oil exports). This definition will be one of the details worked out in the development of rules for the Clean Development Mechanism (CDM). The Protocol does not specify that this provision refer only to the groups of countries referred to in Article 4.8, though that Article does describe some of the vulnerabilities faced by nations who might be eligible for adaptation assistance. Nor does the Protocol specify any countries that would be excluded from receiving any portion of such funding. As with other decisions regarding rules for the CDM, any proposals to specify vulnerable countries who would be entitled to assistance in meeting their costs of adaptation would have to meet the approval of all the Parties.

Question 35.1. Does the United States have an understanding with Brazil, or with any other nations, as to a limit, or potential limit, on the amount of money derived from projects under the Clean Development Mechanism that will be diverted to developing nations for adaptation purposes?

Answer. No.

Question 36. My understanding is that the fourth session of the Conference of the Parties in November will review the adequacy of Articles 4.2(a) and (b) of the Convention. Given that the Conference of the Parties adopted the Kyoto Protocol and that Articles 4.2(a) and (b) of the Convention have nothing to do with commitments of developing nations, will you assure this Committee that the position of the United States at the November session will be that Articles 4.2(a) and (b) of the Convention are "adequate?"

Answer. We agree that the objectives of the Framework Convention on Climate Change cannot be fully met unless developing countries assume some of the commitments assigned only to developed countries in the Convention. In that respect, Articles 4.2(a) and (b) are inadequate because they do not include developing countries.

Question 37. The Kyoto Protocol contains no provisions that describe what the procedures and consequences will be if a Party is not in compliance with its commitments under the Protocol. Article 17 of the Protocol does not itself provide deterrence to non-compliance; yet we know that, for any number of reasons, the United States would comply with its commitments if the Protocol ever received the advice and consent of the Senate. What specific proposals did the U.S. delegation make during the negotiations that concluded with the Kyoto Protocol that detailed the procedures to determine whether a Party was in non-compliance, and, in case of non-compliance, what specific consequences would ensue in different situations?

Answer. U.S. proposals regarding non-compliance procedures and consequences are contained in the January 1997 protocol framework submitted to the Secretariat, as elaborated in June 1997. U.S. proposals did not detail procedures to determine non-compliance; this was to be left to the Parties for elaboration. U.S. proposals did, however, specify consequences for certain situations. For example, in the U.S. pro-

posal, a Party would not have been able to participate in emissions trading if it was not in compliance with its obligations related to measurement of emissions or its obligations to report resulting data. A Party would also not have been able to participate in trading if it did not have in place a national mechanism for certification and verification of trades. Finally, a Party that exceeded its budget would also not be permitted to sell its allowances in that budget period.

Although it did not, strictly speaking, address the issue of "non-compliance," the U.S. proposal also included a provision that would have set forth the consequences for a Party that exceeded its emissions budget in a budget period, namely it would have had to reduce, by a specified ratio (at a penalty rate) of greater than 1:1, the amount of its budget for the subsequent budget period. The proposal assumed acceptance of the principle of "borrowing" from a later period for use in an earlier period—a concept that was not included in the final Protocol—but which may nevertheless be relevant to drafting rules for operation of the future regime.

Question 37.1. Does the Administration favor use of trade sanctions, such as embargoes, in case of certain types of non-compliance; and, if so, please tell us what the Administration is considering in that regard?

Answer. The Administration does not currently have a position on the use of trade sanctions in case of certain types of non-compliance.

Question 38. Is the Administration contemplating submitting to Congress any other legislative proposals, or is it contemplating proposing any new or amended regulations, any of which are intended to reduce U.S. greenhouse gas emissions, prior to the President's signing the Kyoto Protocol and submitting it to the Senate for its advice and consent? If so, will you please describe the substance of any such legislative or regulatory proposals that are being contemplated?

Answer. President Clinton has chosen to emphasize those domestic measures that are more voluntary and incentive-based in nature. The President has laid out a comprehensive plan for cutting U.S. emissions of greenhouse gases that will enhance, not diminish, our economic growth and competitiveness. The President's plan includes \$6.3 billion in tax incentives and R&D spending over five years on energy efficient and low carbon-emitting technologies, restructuring of the electricity industry that will both cut emissions and save taxpayer dollars, overhauling of Federal energy use and procurement practices, and industry-by-industry consultations to develop specific voluntary plans for reducing emissions. Such actions have other benefits not directly related to climate change, including definition of clean, efficient technologies; higher energy efficiency; cleaner air; and reduced health costs. Some of these initiatives will require legislative approval and we look to the Congress for support in these endeavors. In the President's October 22nd policy speech, he stated that the Administration would pursue these initiatives whether or not any agreement was reached in Kyoto.

Question 39. Has any Department or agency of the Executive Branch, or any interagency body, been given the responsibility to develop potential proposals for legislation or regulations that would be intended to facilitate compliance by the United States with the Kyoto Protocol if the Protocol ever were to become binding on this nation? If so, will you please identify the Departments, agencies, or interagency body; and, if it is an interagency body, who is the head of it?

Answer. To date, no agency or interagency body has been given responsibility to develop potential proposals for legislation or regulation that would be intended to comply with the Kyoto Protocol if it were to become binding on the U.S. There is a great deal of work to be done between now and then to flesh out some of the mechanisms and methodologies in the Protocol, and to ensure that we have greater developing country participation in the global solution. If we are successful in getting the additional elements we need and the Kyoto Protocol is ratified by the Senate and enters into force, the Administration will work closely with Congress to consider and develop means by which the U.S. can comply with our resulting commitments.

ATTACHMENT #1**Report to Congress on Federal Climate Change Expenditures**

*Prepared by the Office of Management and Budget, March 1998
Pursuant to Section 580 of Public Law 105-118*

The State Department supports the work of the UN Framework Convention on Climate Change Secretariat and the Intergovernmental Panel on Climate Change (IPCC)—the single, most authoritative, international scientific and technical assessment body with respect to climate change. Many nations rely on the IPCC for information and assessment advice on climate change.

Indirectly Related Programs

Several Federal agencies conduct programs that are indirectly related to global climate change. For example, the Department of Defense conducts research to improve energy efficiency of military aircraft as a means of improving defense capability. The Department of Transportation conducts research that can lead to improved vehicular traffic flow and reduced fuel consumption. By promoting energy efficiency, these programs can also help reduce the Nation's emissions of greenhouse gases. Nevertheless, since the primary focus of these programs is not on climate change, the Administration does not consider them to be "climate change programs and activities," as stipulated in Section 580 of the Foreign Operations bill.

ATTACHMENT #2**Climate Change Technology Initiative
1999 Budget Briefing Materials**

February 2, 1998

... So while we recognize that the challenge we take on today is larger than any environmental mission we have accepted in the past, climate change can bring us together around what America does best—we innovate, we compete, we find solutions to problems, and we do it in a way that promotes entrepreneurship and strengthens the American economy.

If we do it right, protecting the climate will yield not costs, but profits; not burdens, but benefits; not sacrifice, but a higher standard of living.

President Clinton, October 22, 1997

Climate Change Technology Initiative**Introduction**

Last October the President outlined the three-stage approach the U.S. will take in addressing climate change. The first stage consists of immediate actions to stimulate development and use of technologies that can minimize the cost of meeting U.S. goals in reducing greenhouse gas emissions. Stage two will review options created through ongoing technology development and lead to detailed plans for a market-based permit trading system for carbon emissions. Stage three will begin to implement a market-based emissions-trading system.

The President's 1999 budget includes \$2.7 billion over five years for increased R&D and deployment of energy efficiency, renewable energy, and carbon-reduction technologies, and an additional \$3.6 billion over five years in tax incentives. These provide a total initiative of \$6.3 billion in new funding and tax expenditures over five years to stimulate adoption of more efficient technologies in buildings, industrial processes, vehicles, and power generation.

During the coming year, federal agencies will supplement these activities with three other actions outlined in the President's plan:

- Active support for industry-by-industry consultations with all major business sectors.
- Changes in federal procurement policy to ensure that Federal agencies make all cost-effective energy investments and take advantage of energy savings performance contracts and other service available from private investors.

- Introduction of utility restructuring proposals that will reduce carbon emissions while saving customers billions of dollars in electric bills.

Section 1 below shows several summary tables that provide a variety of views or perspectives on the Climate Change Technology Initiative (CCTI)—by agency, by type of activity, direct spending, and tax incentives. Following that, in Section 2, are programmatic details organized by the sector or technical topic on which they are focused.

Section 1.—Summary Tables

Table 1.—Climate Change Technology Initiative (Agencies)
(Direct programs and tax incentives, millions of dollars)

Selected agencies	1997 actual	1998 estimate	1999 proposed	Increase 1998 to 1999	Increase 5-year total
Energy	657	729	1,060	331	1,899
Environmental Protection Agency	86	90	205	115	677
Housing and Urban Development	—	—	10	10	10
Commerce	—	—	7	7	38
Agriculture	—	—	10	10	86
Appropriations Sub-Total	743	819	1,292	473	2,710
Tax Incentives	—	—	421	421	3,635
Total Initiative	743	819	1,713	894	6,345

Table 2.—Two Views of the Climate Change Technology Initiative

Principal Technical Areas	Major Types of Federal Activity
Efficient buildings, heating and cooling, and appliances	Cost-shared R&D partnerships with industry.
Efficient transportation (automobiles, trucks, and transportation planning)	Supporting research in materials, combustion, and biotechnology.
Efficient industrial processes and technologies	Limited-duration tax incentives to promote adoption of major technical innovations.
Low-carbon generation of electricity using renewable energy, and	Labeling and information programs to stimulate markets for highly efficient products.
Techniques for permanently capturing and sequestering greenhouse gases	Policy studies and market incentives.

The Climate Change Technology Initiative encompasses programs in five agencies, and most of the participating agencies are expected to make contributions in several sectors, so coordination is important. Table 3 shows the total multi-agency funding applied to climate change issues in the key end-use sectors and technical topics that form the basis for interagency coordination in the CCTI.

Table 3.—Climate Change Technology Initiative (Sectors)
(Direct programs and tax incentives, millions of dollars)

Key Sectors and Topics	1998 estimate	1999 proposed			Total increase 1998–1999	Total Tax Incentives 1999–2003
		Appropriations	Tax incentives	Total		
Buildings	146	264	136	400	254	1,696
Industry	156	216	276	492	336	1,004
Transportation	246	356	4	360	114	744
Electricity	220	312	5	317	97	191

Table 3.—Climate Change Technology Initiative (Sectors)—Continued
(Direct programs and tax incentives, millions of dollars)

Key Sectors and Topics	1998 estimate	1999 proposed			Total increase 1998–1999	Total Tax Incentives 1999–2003
		Appropriations	Tax incentives	Total		
Carbon Sequestration and Cross-Cutting Research	0	42	—	42	42	—
Policy Analysis, Market Incentives	6	26	—	26	20	—
Program Direction	45	57	—	57	12	—
Total	819	1,292	421	1,713	894	3,635

The budget provides tax incentives to accelerate the adoption of new technologies, which complements the direct Federal R&D and deployment spending. Incentives are provided in each of the major sectors that the CCTI addresses, as shown in Table 4.

Table 4.—Climate Change Technology Initiative Tax Incentives
(Tax Expenditures, millions of dollars)

	1999	Total 1999–2003
Buildings		
Provide tax credit for energy-efficient building equipment	123	1,379
Provide tax credit for new energy-efficient homes	7	197
Provide tax credit for rooftop solar systems	6	120
Transportation		
Provide tax credits for highly fuel efficient vehicles (begins in year 2000) ...	—	660
Equalize tax treatment of parking, transit, and vanpool benefits	4	84
Industry		
Provide tax credit for combined heat and power systems	270	942
Provide tax credit for certain circuit breaker equipment	3	36
Provide tax credit for PFC/HFC recycling equipment	3	26
Electricity		
Extend production tax credit for electricity produced from wind and biomass	5	191
Total	421	3,635

Section 2.—Programmatic Details

Buildings

Buildings produce 35% of U.S. greenhouse gas emissions. Much of this is the indirect result of producing electricity since more than two thirds of electricity produced is consumed in buildings. The energy used in the typical home causes significantly more greenhouse gas emissions that does a typical car.

Building shells last a long time and the bulk of greenhouse gas emissions in 2010 will come from buildings standing today. Appliances and building equipment, such as heating, ventilation, and air conditioning (HVAC) equipment, are replaced much more frequently. The budget includes several programs designed to develop highly efficient new appliances and HVAC systems and to create incentives for their use. Over the long-term, it is essential that new buildings be designed and built with the same kinds of technology that have permitted most successful U.S. businesses to improve quality—including lowering energy demand and emissions—while reduc-

ing costs. Overall, Federal appropriations for buildings technology are proposed to increase \$118 million (81 percent) in 1999 to a total of \$264 million.

1. Efficient Building Equipment and Appliances

- DOE proposes to expand research partnerships for building equipment and appliances by \$19.7 million to increase the efficiency of lighting, refrigerators, air-conditioning systems and other building equipment. By 2000, for example, the program hopes to help industry develop a prototype refrigerator using half the electricity of today's equipment and to complete field tests of advanced absorption chillers and natural-gas heat-pumps.
- EPA and DOE will expand their partnerships that are helping consumers and businesses reduce their energy bills and their greenhouse gas pollution by up to one-third or more. The EPA and DOE Energy Star appliance labeling program is helping consumers save significantly on their energy bills. EPA and DOE will work with manufacturers to expand the Energy Star label to new product lines, building on recent partnerships with consumer electronics manufacturers.
- Markets for a new generation of building equipment will be encouraged through \$1.4 billion in tax credits over five years. The credits would equal 20 percent of qualified investments in fuel cells, electric heat pump water heaters, natural gas heat pumps, residential size advanced electric heat pumps, natural gas water heaters and advanced central air conditioners.

2. Efficient Building Design and Construction

Over the long-term, it is possible to achieve 30–50 percent or greater reductions in building energy use by using modern engineering methods to improve product quality and lower production costs. A partnership with builders, suppliers, insurance companies and state and local governments will undertake a program to accelerate development and demonstration of inexpensive, highly efficient, attractive housing, and to streamline federal, state, and local building and utility regulations in ways that encourage innovation in construction. These energy efficiency innovations will be combined with design improvements that increase resistance to wind and seismic damage (thereby reducing insurance costs), reduce construction injuries, and reduce maintenance. The program includes:

- \$13.4 million increase in DOE's program to improve whole building designs, which expands the highly successful Build America partnerships. By the end of 1998, the program will complete 300 attractive homes that cost less to build than conventional units and simultaneously reduce energy use by 30 percent or more.
- \$200 million in tax credits over five years for a new program designed to encourage builders to develop and introduce innovative housing designs and production methods that result in high-quality, affordable, highly efficient new homes. The credit would equal one percent of the purchase price of the home, up to a maximum of \$2,000.
- Expansion of EPA's Energy Star Buildings and Energy Star Homes programs to provide reliable information and technical assistance to help businesses and homeowners reduce their energy use while saving money.
- \$10 million for HUD to manage the new Partnership for Advanced Technology in Housing (PATH) program in conjunction with DOE and EPA. PATH will link the efforts of builders, suppliers, insurance firms, financial institutions, as well as the numerous Federal, state, and local agencies with programs affecting the housing industry. This partnership will identify and seek to remove barriers that have reduced incentives for innovation in housing design and construction.

3. Million Solar Roofs

Since the President challenged the Nation to have a million rooftop solar units installed and operating in a decade last fall, utilities, States, and Federal agencies have already set goals to place about 500,000 solar energy systems on U.S. roofs. A new DOE program will continue this momentum through R&D and deployment partnerships with state and local governments, energy service providers, the solar industry, developers, and builders. Funds will also be used to train builders and inspectors. The budget request for this program in 1999 totals \$12 million, with \$10.5 million for photovoltaic units and \$1.5 million for solar water and space heating equipment.

The budget also proposes a new tax credit available for purchasers of rooftop photovoltaic systems and solar water heating systems located on or adjacent to buildings for purposes other than heating swimming pools. The credit would be 15 per-

cent of qualified investments up to a maximum of \$1,000 for solar hot water heaters and \$2,000 for photovoltaic systems. The credits are estimated to provide \$120 million for five years.

Transportation

Cars, trucks, aircraft, and other parts of the Nation's transportation system are responsible for about a third of U.S. greenhouse gas emissions. Emissions in transportation are growing rapidly, both because Americans are driving more and because of the growing popularity of sport-utility and other larger vehicles. A range of new technologies make it possible for Americans to continue to enjoy the best personal transportation in the world while emissions of greenhouse gases are reduced by factors of two or three. The budget also provides increased support for truck technologies, since the amount of fuel used in trucks (including trucks used largely for personal transportation) now exceeds fuel use in cars. The budget calls for a \$110 million (45 percent) increase in appropriations for transportation R&D over 1998, providing a total of \$356 million in 1999. This would be supplemented by tax credits to stimulate key early markets.

1. New Generation Automobiles

The Partnership for a New Generation of Vehicles (PNGV) is on schedule for meeting its ambitious goal of building a production prototype of an attractive, affordable automobile which can achieve up to three times the fuel efficiency (and on third the greenhouse gas emissions) of comparable vehicles sold today. All three U.S. auto makers demonstrated concept cars capable of approaching the PNGV fuel efficiency goal in this year's Detroit Auto Show. An enormous amount of work remains to be done, however, to convert these concept vehicles into practical production vehicles. The bulk of the vehicle development investment will be made by the industry, but Federal cost-sharing is essential to address key research needs.

Federal research funding for advanced automobiles will be increased and a new tax credit will be provided to encourage a shift to advanced technology vehicles. Following a program plan developed in close partnership with industry, the program will focus on propulsion technology and lightweight materials, with significant increases planned in the following areas:

- *A \$50 million (22 percent) increase in funding for all agencies for PNGV-related work (a total of \$277 million) which includes:*
 - *A \$21 million increase to develop fuel cells that can be practical substitutes for today's internal combustion engine.*
 - *A \$10.4 million increase in funding for advanced direct injection diesel cycle engines that can provide attractive power systems for hybrid vehicles if emission problems can be overcome. Federal funding will focus on particulate and NO_x emissions, and will include analysis of alternative fuels for direct-injection diesels.*
 - *An accelerated EPA program to develop a low-NO_x methanol-fueled diesel engine that can simultaneously achieve high efficiency and low carbon, particulate, and nitrogen oxide levels.*
- *Tax credits to stimulate early introduction of new generation automobiles and light trucks. In the year 2000, a credit of up to \$3,000 would be provided for vehicles achieving two times the efficiency of today's comparable vehicles (2X), and in 2003 a credit of up to \$4,000 would be provided for cars that achieve three times today's efficiency (3X). The 2X credit would be phased out by 2003 and the 3X credit by 2010. These credits would total \$660 million for the five years between 1999 and 2003, but would continue after that date. The credits are designed to encourage early introduction of major innovations in vehicle technology, not to encourage consumers to shift to smaller vehicles or vehicles offering reduced amenities.*

2. Trucks

In 1996 the energy used in trucks (including light trucks used principally for personal transportation) exceeded the energy used by automobiles. Two new programs will be launched to develop technologies that will both improve truck efficiency and reduce emissions:

- *Heavy Truck Partnerships.* A new partnership linking the Department of Energy, the EPA, the Department of Defense, and manufacturers will be supported to increase the fuel efficiency of today's heavy, diesel-powered trucks. Heavy vehicle systems R&D will increase by \$20 million. The research should make it possible to increase the fuel efficiency of heavy diesel engines from their current levels of 44 percent to 55 percent, and to increase fuel efficiency of heavy trucks

(class 7–8) from 7 mpg to 10 mpg. The research focuses on direct-injection diesel engines, and is aimed at improvements in both fuel economy and meeting future particulate and NO_x (nitrogen oxides) emissions standards.

- *Light Truck Partnerships.* A second new partnership, led by the Department of Energy, will focus on developing improved diesel engines for use on light trucks and sport-utility vehicles. These are the fastest-growing segment of the passenger vehicle market, but they are also the least fuel-efficient. Fuel efficiency in these vehicles could be increased by as much as 35 percent if they used diesel engines instead of normal gasoline engines. However, if diesel engines are to be substituted for gasoline engines on a large scale, they must be *clean* diesels, with particulate and NO_x emissions comparable to gasoline engines. Making diesel engines that clean poses a major technical challenge, which is shared by the PNGV program in their diesel-hybrid designs. The 1999 budget includes a new initiative to develop medium-sized diesel engines for light trucks, with a focus on the necessary environmental technology, and coordinated with similar efforts being made within PNGV.

3. Encouraging Sustainable Communities and Use of Mass Transit

Many communities are developing innovative ways to reduce congestion and transportation energy needs by improving highway designs and urban planning and by encouraging mass transit.

- *Tax credits to encourage use of mass transit.* Present tax laws exclude parking benefits from income taxes even if employer offer these benefits in lieu of other compensation. The proposed new credit would apply the same rule to employees whose employers offer transit and van pool benefits in lieu of compensation. The new proposal would also correct a defect in current law, which allows employees to exclude up to \$155 (in 1993 dollars) in parking benefits from income, but only \$60 (in 1993 dollars) for employer-provided transit and van pool benefits. The change would increase the exclusion for transit and van pool benefits to \$155, the same as for parking benefits.
- *Expanded EPA and DOE partnerships with state and local decision-makers to develop and implement "sustainable transportation" plans.* These will promote alternatives to single-occupancy vehicle travel, modeled after the approach adopted by Portland, Oregon. They will also promote compact, walkable, and mixed-use development—while reducing the growth in vehicle travel, emissions, and congestion. Programs in EPA and DOE will be coordinated with existing and planned DOT programs.

Industry

The initiative expands Federal research efforts to develop innovative technologies and production methods which can help businesses achieve productivity gains and prosper in a competitive marketplace while leading to major reductions in emissions of greenhouse gases. Manufacturing, materials, and process industries produce over 80 percent of hazardous wastes and 95 percent of toxic wastes. Most of these greenhouse-gas emissions technologies will also lead to a sharp reduction in the production of toxic wastes.

The expanded program builds on visionary research plans jointly developed by DOE and EPA with a number of major industries over the past three years. The total appropriated funding for industrial research is proposed to increase by \$60 million (38 percent), to \$216 million in 1999. This will be supplemented by tax credits worth over \$1 billion over a five year period.

1. Expanding the DOE Industries of the Future and Other Industrial Programs

Funding will increase \$29 million (22 percent) to \$166 million in this DOE program to support research priorities identified by industry teams over the past few years. Partnerships currently exist with the aluminum, steel, glass, paper and forest products, metal casting, and chemicals industries, which have all completed or will soon complete industry vision statements and technology road maps. For example, the 1999 budget proposes to:

- *Start a new \$19 million competitive grant program, open to any industrial production technology that can lead to major cost-effective reductions in greenhouse gas emissions.* The program is expected to support about 40 new technologies
- *Provide an increase of \$2.8 million dollars for developing advanced technologies in bulk chemical production,* which can allow these industries to substitute clean, efficient production bio-chemical processes that imitate the efficient processes of living cells.

- *Increase funding for the Motor Challenge program by \$4.8 million to support high-technology controls and other systems that can cut electric use by as much as 50 percent in systems running pumps, fans, chillers, and other mechanical equipment in industry.*

2. Expanding EPA's Industrial Partnership Program

EPA will expand its partnership programs with key industries by \$29.2 million, complementing DOE's Industries of the Future program. EPA will also lead a multi-agency effort (including DOE) to develop voluntary by aggressive agreements for cost-effective reductions of greenhouse gas emissions and credit early action. These agreements will be designed to catalyze the ingenuity of American business and double the rate of energy efficiency improvements in key industries over the next decade, while enhancing the productivity of American industry. These agreements will build upon EPA's success at forming partnerships with industries such as aluminum and metal finishing. EPA will further consult with industry to identify cross-cutting national goals for efficient, low-pollution technologies and processes, such as the use of combined heat and power systems that reduce energy waste from power generation.

3. Tax Credits

Tax credits proposed in the budget will stimulate rapid introduction of a set of technologies which can lead to major reductions in industrial greenhouse gas emissions during the next few years. A tax credit for combined heat and power (CHP) systems is particularly important in order to encourage investments in systems that produce both electricity and process heat and/or mechanical power from the same primary energy source. Two-thirds of the energy used to generate electricity in conventional systems is exhausted as "waste heat."

- *A 10 percent investment tax credit for highly-efficient CHP systems that have depreciation recovery periods of 15 years or more. The proposed credits would total \$942 million over five years.*
- *A 10 percent tax credit for replacement of circuit breaker equipment which uses sulfur hexafluoride, an extremely powerful greenhouse gas, would encourage utilities and other owners of these devices to replace them with modern equipment. This credit would total \$36 million over five years.*
- *A 10 percent tax credit for the installation of qualified recycling equipment to recover certain perfluorocompound and hydrofluorocompound gases used in the production of semiconductors. This credit would total \$26 million over five years.*

Electricity

Generation of electricity in the U.S. is responsible for more than a third of U.S. greenhouse gas emissions; 77 percent of these emissions come from coal burning plants. The budget emphasizes research on renewable energy technologies, which produce virtually no net greenhouse gases. (Hydroelectric and other renewable energy sources produce about 9 percent of U.S. electricity today.) Increases are also provided for R&D to extend the life of nuclear plants, which produce nearly 22 percent of U.S. electricity, and to improve the efficiency of coal combustion, which could reduce carbon emissions from coal-fired generating units.

DOE and EPA will work with States and utilities on the restructuring of the electricity sector, to ensure that the restructuring does not create barriers to the adoption of renewable and low-carbon generating technologies.

1. Renewable Energy

The FY 99 budget proposes funding for research partnerships in wind, photovoltaics, biomass, solar thermal, geothermal, and other renewable energy resources that can lead to competitively priced sources of electricity, heat, and chemicals with little or no greenhouse gas production. The total DOE budget for renewable energy, hydrogen, and energy storage research is proposed to increase \$117 million (43 percent), to \$389 million. Funding for renewable energy crop research in USDA is proposed to increase by \$10 million. The program increases include:

- *An increase of \$13.3 million (to \$78.8 million) for photovoltaics. A major goal is increasing the efficiency of commercial units, such as improving solar shingles, which can be used to support the million solar roof initiative, from 7 percent efficiency in converting solar energy to electricity to 10 percent.*
- *Renewable Energy Production Tax Credit. A 5-year extension is proposed for the tax credit for electricity produced from wind and biomass.*

- *An increase of \$10.5 million (to \$43.5 million) for wind energy systems.* In regions with good wind resources (average wind speed = 15 mph), new wind machines can produce electricity at 4 cents per kWh. With the planned research, costs can be reduced to 2.5 cents per kWh by 2002 in areas with good wind resources.
- *An increase of \$39.1 million in research on conversion of wood and crop wastes and energy crops to fuels and electricity.* This includes a \$29.1 million increase in DOE and \$10 million in USDA. These two agencies will work closely to support efforts that can lead to new sources of income for farm communities, produce rural jobs in value-added processing, and produce fuels and electricity at competitive prices.

2. Nuclear Power-Plant Life Extension

DOE will initiate an R&D effort addressing the critical technology needs to allow currently-operating nuclear power plants to safely extend their operating lifetimes by 10 to 20 years. Under current NRC licenses, approximately 60 gigawatts of electric generating capacity would have to be retired between now and 2015. (Most of that comes between 2005 and 2015.) NRC has indicated that they would probably not grant any plant more than one life extension. This initiative would:

- *Support development of technologies necessary to safely operate these plants for another 10 to 20 years* will make the transition to other low-carbon sources, such as solar and renewable energy, much easier.

3. Innovative Coal Combustion Technologies

In FY 99, DOE will initiate a research program on innovative new approaches to coal combustion that offer the possibility of much lower carbon emissions than existing technologies.

Carbon Removal and Sequestration

- *Sequestration R&D.* \$42 million in new research is proposed in the budget to find ways to remove carbon dioxide (CO₂) from combustion gases and sequester (store) the carbon so that it does not enter the atmosphere.
- *DOE's basic science office* will engage in biochemical and microbial research.
- *DOE's fossil energy office* will conduct an applied sequestration R&D program, jointly managed with the basic science office.
- *USDA* will initiate research on enhancing the carbon-sequestering capabilities of agricultural species. NIST will support complementary biotechnology work on plant metabolism and carbon use.
- *EPA* is requesting an increase of \$3.4 million for work with forest products industries to achieve greater reliance on biomass fuels as an energy source and to sequester carbon in forests.

Cross-cutting Analysis and Research

- *Emissions credits, incentives, and trading.* EPA will lead an effort, assisted by DOE, to evaluate options for a domestic trading system and early reduction program in industry. The Federal government will work with stakeholders to understand their views and interests, and to build the institutional capacity needed to implement a carbon emissions credit and trading system.
- *Program and science assessments.* DOE will lead efforts to assess the implications of new research results produced by the Global Change Research Program in order to determine what geographic and technological responses may be appropriate.

ATTACHMENT #3**U.S. National Communication to the U.N. Framework
Convention on Climate Change****Climate Action Report**

[This document is on file as part of the Committee's permanent hearing record. It can also be accessed on the Internet at: <http://www.state.gov/www/global/oes/97climate—report>]

ATTACHMENT #4**Prepared Testimony of Dr. Janet Yellen, Chair, Council of
Economic Advisers, Before the House Commerce Committee,
March 4, 1998**

Thank you, Mr. Chairman. The President has said that we can work to avert the grave dangers of climate change, while at the same time maintaining the strength of our economy. I agree and am pleased to have this opportunity to appear before the Committee to elaborate on the Administration's views on these issues.

The international agreement that was reached in Kyoto this past December is a crucial step forward in addressing global climate change. But it is only one step in a journey. Since the international effort to reduce greenhouse gas emissions is still in some respects a work-in-progress, it is not yet possible to provide a full authoritative analysis of it. Many of the specifics in several crucial areas are not completely resolved in the diplomatic arena, forcing analysts to make a variety of assumptions about the ultimate form of the international regime. In my testimony today, I will attempt to identify key elements of the agreement and the Administration's policy, such as international emissions trading, meaningful developing country participation, inclusion of land-use activities that absorb carbon ("sinks") and six categories of gases, as well as domestic initiatives, that together can ensure that reductions in global greenhouse gas emissions are consistent with continued strong economic growth. I will explain the reasoning underlying our conclusion that, under these conditions, economic impacts are likely to be modest.

The Administration is strongly committed to ensuring that these key elements are reflected in our domestic and international climate change policies. We are firmly committed to meaningful developing country participation, the use of sinks to offset emissions requirements, and emissions trading both domestically and internationally. And as you know, the President's FY 1999 budget includes a \$6.3 billion package of tax cuts and R&D investments over the next five years; this package makes good sense in terms of energy policy and will jump start our efforts. A final component of the President's climate change policy is his support for electricity restructuring in a manner that will offer approximately \$20 billion in cost savings to electricity consumers, while reducing greenhouse gas emissions.

Basic Economic Rationale of the Kyoto Treaty

To begin our analysis, it may be worth stepping back and examining the larger question of the basic rationale, from an economist's perspective, for the Kyoto Protocol.

The earth's surface appears to be warming from the accumulation of greenhouse gases from myriad sources worldwide. None of these emitters presently pays the cost to others of warming's adverse effects—a classic externality in the language of economists. As a result of these distorted incentives, disruption of the Earth's climate is likely to proceed at an excessive pace and if left uncontrolled may pose substantial costs in terms of harm to commerce and the environment alike. The fundamental economic logic of the Kyoto Protocol is thus that without such an international agreement, individual nations will not have the proper incentives to address the threats from global climate change.

Costs of Climate Change

In evaluating efforts to mitigate global warming, the first step is to consider the costs of inaction. These costs—and they are significant—provide the primary motivation for actions to reduce greenhouse gas emissions.

The Intergovernmental Panel on Climate Change (IPCC), jointly established by the World Meteorological Organization and the United Nations Environment Programme, concluded in 1995 that “the balance of evidence suggests that there is a discernible human influence on global climate.” Current concentrations of carbon dioxide, methane, nitrous oxide, and the other so-called greenhouse gases have reached levels well above those of preindustrial times. Of these, carbon dioxide (CO₂) is the most important: net cumulative CO₂ emissions resulting from the burning of fossil fuels and deforestation account for about two-thirds of potential warming from changes in greenhouse gas concentrations related to human activity.

Climatic Impact

If growth in global emissions continues unabated, the atmospheric concentration of CO₂ will likely double relative to its preindustrial level by midway through the next century and continue to rise thereafter. As a result of the increased concentration of CO₂, the IPCC estimates that global temperatures will increase by between 2 to 6 degrees Fahrenheit in the next 100 years, with a best guess of about 3.5 degrees Fahrenheit. While scientists believe that human activities are leading to a gradual warming of the average temperature of the earth, the change in temperature in a given region at a given time may differ substantially from this average. Indeed, models predict warming will be greater in high latitudes than in the tropics, and greater over land than ocean.

Potential consequences associated with this shift in climate include a rise in sea levels, greater frequency of severe weather events, shifts in agricultural growing conditions from changing weather patterns, threats to human health from increased range and incidence of diseases, changes in availability of freshwater supplies, and damage to ecosystems and biodiversity.

Economic and Monetary Damages

The derivation of quantitative or monetary estimates of the damages from such a change in the climate is extremely difficult given the capacity of today's models. Estimates of the economic damages from climate change fall into the following broad areas: agriculture, sea-level rise, air conditioning and heating, water supply, human life and health, air pollution, and other costs (hurricanes, relocation costs, human amenity, construction, leisure activities, urban infrastructure, and ecological damages such as forest loss and species loss). Although the quantification of these effects is quite demanding, researchers have developed estimates that prompt substantial concern. The IPCC reports that a doubling of carbon dioxide levels would lead to approximately 10,000 estimated additional deaths per year for the current U.S. population from higher summer temperatures, even after netting out the effects of warmer winters and assuming acclimatization. Other researchers have predicted sea level increases of about 20 inches by 2100, with greater increases in subsequent years.

Despite the difficulties, respected researchers have developed estimates of the monetary damages expected from an average worldwide temperature increase. For example, William Cline, then of the Institute for International Economics, estimated that a temperature change of 4.5 degrees Fahrenheit would impose annual damages of about 1.1 percent of GDP per year on the U.S. economy. That amounts to \$89 billion in today's terms. (Cline's original estimate is quoted in 1990 dollars. The figure given above translates this number into 1997 terms by scaling it to current GDP.) William Nordhaus of Yale University has likewise computed estimates of the dollar loss attributable to a doubling of greenhouse gas concentrations. Although he uses methods that differ from Cline's in several respects, Nordhaus estimates that a slightly larger temperature change of 5.4 degrees Fahrenheit would impose losses equal to about 1 percent of GDP. A third independent estimate reported by Nordhaus is close to Cline's. It must be noted, however, that this similarity among aggregated estimates masks the true uncertainty associated with forecasts of the damages from given increases in global warming—the estimates are all fundamentally based on extrapolations from current and past experience, and may not fully incorporate effects that will unfortunately become apparent only with future experience.

One key difficulty in interpreting and monetizing these estimates of damages is uncertainty over the extent that they should be discounted because they occur in the distant future. Since the benefits of stemming future climate change accrue over not only decades but centuries, small changes in the discount rate can produce sub-

stantial changes in the results. But the precise discount rate that should be used to evaluate questions as important as the future climate of the planet remains a subject of intense debate. It is safe to say that there is, as yet, no professional consensus on the issue. Indeed there can be no technical answer to the ethical question how we should value the welfare of future generations.

A similar difficulty with such estimates is that they do not include potential nonlinearities in the relationships between greenhouse gas concentrations and temperature, between temperature and economic damages, or in the various other complicated relationships governing interactions between greenhouse gas emissions, the climate, and the economy. Current estimates of damages do not, and cannot, accurately reflect the value of reducing the unknown risk of large-scale and potentially irreversible discrete events with potentially catastrophic consequences.

Two such possibilities serve as illustrations. Warming of Northern tundra may release huge amounts of methane from the permafrost, thereby leading to accelerated warming. We do not know at what point, if any, such potentially unstable activity would be triggered. Second, evidence from climate models suggests that some types of climate change may lead to changes in ocean currents, including weakening of the Gulf Stream that warms Western Europe. Scientific evidence suggests that abrupt seawater temperature shifts have occurred over periods as short as decades.

To what extent are we willing to take such chances with our planet? There is a strong argument for the Kyoto Protocol as a form of planet insurance. But what numerical weight should one assign to these catastrophic risks? In other words, what is the value of the insurance policy? Although it is difficult for an economist, or anyone, to know, reductions in the risk of such catastrophic outcomes must be considered in addition to the costs and benefits that can be reasonably quantified. Since human beings are typically averse to risk, such catastrophic risks are especially important in evaluating whether the benefits of a particular climate control policy justify the costs. One must have at least some sympathy with those who criticize economists on the grounds that the effects of climate change are extremely difficult to quantify in a single monetary number.

Addressing Global Climate Change in an Efficient Manner

The costs of unabated climate change may thus be difficult to quantify, but they are nonetheless real and provide the motivation for reducing greenhouse gas emissions. In taking action to reduce those emissions, economic analysis suggests that two elements are absolutely essential:

- The effort must be global, to address the global externality inherent in the nature of the problem.
- The effort must be flexible and market-based, to ensure that we achieve our objectives in the most efficient manner possible.

Need for Global Action

Climate change is a global problem requiring a global solution. As I mentioned earlier, no single country has an incentive to reduce emissions sufficiently to protect the global environment against climate change. Each has an economic incentive to “free ride” on the efforts of others. Even if the United States sharply reduced its emissions unilaterally without an international agreement limiting emissions abroad, greenhouse gas emissions from all other countries would continue to grow, and the risks posed by climate change would not be significantly reduced. It is important to emphasize that emissions of different gases anywhere in the world have very similar effects on global climate.

The threat of disruptive climate change has led to coordinated international efforts to reduce the risks of global warming by reducing emissions of greenhouse gases. A landmark international agreement to address global warming was the Framework Convention on Climate Change signed during the Earth Summit in Rio de Janeiro in 1992. This convention established an objective of limiting greenhouse gas concentrations and called upon industrial countries to return their emissions to 1990 levels by 2000. Since then, it has become clear that the United States and many other participating countries will not meet this voluntary goal; quite the contrary, emission levels have continued to rise not fall among both developed and developing countries.

To address the lack of progress among many industrialized countries toward meeting the Rio objective, the United States and approximately 160 other nations agreed in negotiations held in Kyoto, Japan, last December, to reduce emissions of greenhouse gases. The Kyoto Protocol, which requires the advice and consent of the Senate, would place binding limits on each industrial country's combined emissions of the six principal categories of greenhouse gases: carbon dioxide (CO₂), nitrous

oxide (N₂O), methane, sulfur hexafluoride, perfluorocarbons, and hydrofluorocarbons. These limits apply to the 38 so-called Annex I countries, which are the industrialized countries, defined to include Russia, Ukraine, and most Eastern European countries.

Under the Kyoto Protocol, each industrial country's baseline is its 1990 emissions of CO₂, methane, and N₂O and its choice of 1990 or 1995 levels of the other three categories of gases. The United States agreed to a target of 7 percent below this baseline by the period between 2008 and 2012. Given the changes in the definition of the baseline for the three long-lived chemical compounds (HFCs, PFCs and SF₆) from 1990 to 1995 combined with a change in the way sinks are accounted for in the baseline, the actual reduction required in the U.S. is no more than 2–3 percent more than the President originally proposed as the U.S. negotiating position. The targets for the European Union and Japan are 8 percent and 6 percent below 1990 levels, respectively. Australia, New Zealand, Norway, Russia, and Ukraine all have limits somewhat less ambitious when phrased as cuts relative to their 1990 levels. In sum, over the period from 2008 to 2012, the industrial countries are expected to reduce their average emissions of greenhouse gases to about 5 percent below their 1990 levels.

The President has made clear that he will not submit the Kyoto Protocol to the Senate without meaningful participation from key developing countries (who are not included in Annex I).

There are several reasons why meaningful participation from developing countries is essential. First, developing countries are projected to contribute a majority of world emissions around 2030 under a continuation of business-as-usual. Without the participation of developing economies, efforts by the industrialized countries to limit emissions will therefore not provide adequate protection from climate change.

Second, developing country participation is crucial because it would permit relatively low-cost emissions reductions to be internationally recognized as a substitute for more expensive emissions reductions that might otherwise be achieved domestically by U.S. companies and those in other industrialized countries. Since greenhouse gas emissions have the same basic impact on the climate regardless of where they occur, emission reductions in developing countries have the same environmental benefit as reductions in the U.S. But these reductions are much less costly than reductions in the U.S. or in other developed nations, because of the very inefficient and carbon-intensive uses of energy in these countries today. It thus makes sense, from both an environmental and an economic perspective, to incorporate emissions reductions in developing countries into the international system.

Third, principles of basic fairness suggest all countries should do their part, depending, in part, on their ability to contribute to the solution. Thus even poor countries should participate, although the lack of resources in such countries may limit the extent of their participation.

Some have expressed fears that the Kyoto Protocol might adversely affect the competitive position of American industry. Evaluating how the Kyoto Protocol could affect competitiveness of a few specific manufacturing industries—especially those that are especially energy-intensive, such as aluminum and chemicals—is complex. The answer depends, in part, on the impact of the agreement on energy prices, which we will shortly address. In general it is difficult to undergo a structural change in the economy without having the effect of expanding some sectors and contracting others. But to provide some perspective on this issue, consider the following facts. First, on average, energy constitutes only 2.2 percent of total costs to U.S. industry. Second, energy prices already vary significantly across countries. According to the 1997 Statistical Abstract, for example, in 1996 premium gasoline cost \$1.28 per gallon in the United States but only 8 cents per gallon in Venezuela. Similarly, gas prices were \$3.71 per gallon in Switzerland and \$4.41 per gallon in France. Electricity prices also vary significantly: in the U.S. they were 5 cents per kilowatt hour in 1995, a fraction of prices in Switzerland of 13 cents per kilowatt hour. Yet U.S. industry is not moving en masse to Venezuela, nor is Swiss industry moving to the United States. Third, roughly two-thirds of all emissions are not in manufacturing at all, but in transportation and buildings, sectors which, by their very nature, are severely limited in their ability to relocate to other countries. We therefore believe we need developing country participation because the problem is global and cost-effective solutions are essential, than to avoid adverse effects on competitiveness.

Flexibility and Market Mechanisms

A global solution is thus critical to the global problem of climate change. Globalizing the solution is not, however, enough by itself. We must also ensure that

our efforts to reduce global greenhouse gas emissions in the most efficient manner possible. The nature of the climate change problem suggests three basic methods to lower costs of achieving given levels of environmental protection. They can be characterized in terms of three categories of flexibility: (1) “when” flexibility; (2) “what” flexibility; and (3) “where” flexibility, which may be the most important of all. Such methods have long been championed by economists interested in increasing the efficiency of protection. Indeed, over 2,500 economists from academia, industry, and government alike urged such approaches in a letter they signed last year advocating action on climate change:

Economic studies have found that there are many potential policies to reduce greenhouse gas emissions for which the total benefits outweigh the total costs . . . The most efficient approach to slowing climate change is through market-based policies.

1. “When flexibility” (timing)

First is “when flexibility” or timing. Since climate change is a long-term problem, the exact timing of emissions reductions is, within some range, not of primary importance. Thus the freedom to delay or accelerate reductions within an agreed upon time frame—while ensuring credibility of emissions reductions—lowers costs.

As a result of U.S. leadership, the Kyoto Protocol incorporates this principle of “when flexibility” in four ways:

- First, the initial emissions reductions are less severe, and the period over which they occur ends much later than what had been proposed by many other countries. By adopting a gradual and credible path of reductions in the early years, we can greatly reduce costs such as those from prematurely scrapping coal-fired electricity plants, while attaining the same ultimate environmental goals.
- Second, under the Kyoto Protocol, the emissions target is not specified in terms of a specific year, but rather in terms of an average over a five-year period (2008–2012). Averaging over five years, instead of requiring countries to meet a specific target each year, can lower costs, especially given an uncertain future. The averaging can smooth out the effects of short-term events such as fluctuations in the business cycle and energy demand, or hard winters and hot summers that would increase energy use and emissions.
- Third, there is allowance for “banking” emission reductions within the 2008–2012 commitment period, for use in a subsequent commitment period (although the emission targets of the subsequent periods have not yet been specified),
- Fourth, CDM credits achieved between 2000 and 2008 may be banked until 2008 to 2012.

2. “What flexibility” (gases and sinks)

The second type of flexibility is “what flexibility”, along two dimensions. The first is the inclusion in the agreement of all six greenhouse gases. Emissions of different kinds of gases, not just carbon dioxide, contribute to the greenhouse effect. Since the IPCC has developed conversion factors for all greenhouse gases by estimating their global warming potentials, reductions in emissions of one gas can be used to substitute for increases in emissions of another by an amount that has equivalent environmental effects. Again at U.S. urging, all six gases are included, while Japan and the EU had insisted until the end on covering only three. Thus the U.S. succeeded in having the Kyoto Protocol stipulate that countries with binding targets are to reduce their total greenhouse gas emissions by certain percentages, but does not require specific reductions for specific gases. Since a molecule of sulfur hexafluoride is 23,900 times more potent over 100 years than a molecule of CO₂, it may be cheaper to achieve the same, environmental benefit by eliminating one molecular unit of SF₆ than nearly 24,000 units of CO₂.

Some initial analysis indicates that a strategy of reducing non-CO₂ greenhouse gas emissions by a greater percent than CO₂ emissions could lower prices by as much as 10 percent. Thus allowing countries flexibility in what gases they reduce—essentially trading emissions reductions across gases—can help lower significantly the costs of meeting their targets.

The second source of “what flexibility” is the treatment of sinks, i.e., land use activities that promote the removal of carbon from the atmosphere through the growth of plants. At the urging of the U.S. delegation, sinks can be used to offset emissions targets. Promoting such sinks through afforestation and reforestation may reduce atmospheric concentrations of CO₂ at much lower costs than reducing emissions of greenhouse gases.

3. "Where flexibility" (international)

The third type of flexibility, and perhaps the most important, is "where flexibility" (international). As I have already emphasized, emissions have the same environmental consequences regardless of where in the world they occur. Therefore, the least-cost approach to controlling climate change is to reduce emissions wherever such reductions are cheapest. The Kyoto protocol, because of U.S. insistence and persistence, includes three important cost-saving provisions of this nature.

- First, it provides the opportunity for countries that take on binding targets to trade rights to emit greenhouse gases with each other. This market in emissions permits could ensure that emissions reductions occur where they are least expensive within the industrial countries. In particular, U.S. companies could purchase emissions reductions in other participating countries when doing so would reduce their costs—thus lowering costs without affecting the level of environmental protection. While currently only industrialized countries have emissions caps, this mechanism also offers an incentive for developing countries to take on emissions targets.
- Second, the agreement provides for Joint Implementation by Annex I countries. Thus if some countries do not develop programs to trade permits internationally, U.S. firms could nonetheless implement projects in those countries for which they could receive emissions reductions credits in the U.S.
- Third, the agreement allows industrial countries to invest in "clean development" projects in the developing world and use these projects' certified emissions reductions toward meeting their targets. Many such clean development projects may be quite cheap in terms of the cost per ton of emissions avoided, as has been illustrated by the Joint Implementation pilot program that is already in place in the U.S.

Details of how these provisions will operate will be discussed in future negotiations such as the one in Buenos Aires later this year. Nonetheless, effective international trading of emission credits, Joint Implementation, and the Clean Development Mechanism can lead to substantial reductions in costs relative to alternative policies that do not exploit the power of market incentives. To illustrate briefly the ability of U.S. industry to perform beyond expectations when given appropriate economic incentives, consider further EPA's highly acclaimed sulfur dioxide (SO₂) program, which relies, among other things, on a system of tradable permits to reduce emissions of SO₂ from electric utilities. The SO₂ program has been successful in several ways: a large number of utilities participate, SO₂ emissions and ambient concentrations have fallen and the costs of reducing emissions are considerably lower than originally forecast.

As has been frequently noted, the average cost of SO₂ emissions reductions has recently been significantly lower than was originally forecast, in part due to the role of incentives in fostering innovation. Emission permit prices, currently at approximately \$100 per ton of SO₂, are well below earlier estimates of around \$250 to \$400 per ton.

Trading programs may not always bring cost savings as large as those achieved by the SO₂ program; trading programs will not always be accompanied by the discovery of much cheaper control strategies. However, the SO₂ experience demonstrates clearly how programs like international permit trading, Joint Implementation, and the Clean Development Mechanism will lead firms to find cheaper ways of reducing emissions that can lead to unexpectedly low costs.

Difficulties of Economic Analysis of the Kyoto Protocol

Now that we have a Protocol—even if it is not yet fully complete nor ready for the President's submission to the Senate—it is possible to examine it in somewhat more detail from an economic perspective. But, once again the inherent limitations of any such estimates deserve emphasis. Such limitations should not be surprising to you: economists have a difficult enough time projecting the behavior of the economy over the next quarter or year, let alone over the next two decades. The scale of the forecasting exercise is therefore daunting, and any specific results should be treated with substantial caution.

The difficulties associated with economic analysis of climate change fall into three broad categories. First are the uncertainties that still remain over the terms of the ultimate treaty, necessitating assumptions on which the analysis is predicated. Second are the inherent limitations of available models to analyze even short-term costs and benefits. And finally is a topic discussed earlier: the impossibility of putting a single monetary number on the long-term benefits of climate change mitigation, although there will clearly be economic benefits of emission reductions

Uncertainties in the International Effort to Combat Climate Change

The Kyoto Protocol was an historic accomplishment, delineating the broad terms of the international effort to address climate change. But although we know a lot more than we did before Kyoto about how that international system can work, and that informs our analysis, there is still much that we do not know.

First, some provisions raise complex implementation issues. At issue here is the treatment of so-called sinks—activities that affect the rate at which carbon is removed from the atmosphere and “sequestered,” e.g., by the planting of trees.

Second, the details of a number of items—primarily concerning international trading, the Clean Development Mechanism, and developing countries—are the subject of further discussions including future negotiations in Buenos Aires next fall, because they had not been definitively settled by the end of the Kyoto talks.

Finally, and most importantly, we have not yet negotiated international agreements to limit emissions beyond the 2012 window. The emission cuts agreed upon at Kyoto are only a first step on a long journey. The first step that we propose to take over the next 15 years is critical. But the reason it is critical is not that, by itself, it will solve the climate change problem—emissions during any given decade are small compared to the cumulative concentrations in the atmosphere. Rather, the first step is critical because we can not take the second and third steps until we have taken the first. At the same time, any analysis is complicated by the lack of knowledge over what the subsequent steps will be.

Inherent Limitations of Models

In addition to these uncertainties about the details of the international effort to address climate change, are the inherent limitations of the models used to evaluate that effort. Even within a given model, answers depend critically on the precise nature of the question asked. For example, the costs of emissions reductions depend critically on the extent of global participation and international trading that a treaty is assumed to feature. But in addition to the dependence of the results from a given model on the precise assumptions, different models can give different answers even when all the assumptions are specified to be the same—a concrete illustration of the range of uncertainty to which we must assign the predictions of any one individual model.

One area in which the uncertainty is particularly large is the pace of technological progress—especially the diffusion of existing energy-efficient technologies, but also the development of new technologies—and the extent to which the pace will accelerate in response to government programs. Models and experts on climate change policy tend to have a wider range of disagreement on the scope for speeding the diffusion of existing energy-efficient technologies than on any other single issue.

Furthermore, each model has strengths and weaknesses; each has questions to which it is better or worse suited to answer. Some, for example, model the energy sector in detail. Some allow for the fact that a coal-fired power plant cannot costlessly be converted to one that runs on natural gas. Some show the effects of hypothetical tax cuts made possible by the new revenues earned through the auction of emissions permits. Some are capable of showing recessions and booms. Others include a long-term “carbon cycle” model that can keep track of the accumulation of greenhouse gas concentrations in the atmosphere and their climatological effects. Some break down the rest of the world into regions and so can model international trade. No one model does everything, and therefore we must not rely blindly on the results of any one model or set of models. Professional judgment and economic intuition, along with diplomatic assessments, are also crucial.

Benefits of Averting Climate Change

As discussed above, it is evident that the benefits of averting climate change are potentially immense. But we have chosen not to try to quantify them in monetary terms, in light of the difficulties we have enumerated. These include the uncertainty of these benefits, their timing and therefore the extreme sensitivity of the results to the chosen discount rate, and the dependence of benefits on emissions paths after the 2008 to 2012 budget period specified in Kyoto.

Assessing the Kyoto Protocol

In order to evaluate the likely net economic impact of the Kyoto Protocol, excluding the benefits of mitigating climate change itself, we have drawn upon a variety of tools to assess the various possible costs and non-climate benefits of the Administration’s emissions reduction policy. To give away the punch line, our conclusion is as follows: the net costs of our policies to reduce emissions are likely to be small, assuming those reductions are undertaken in an efficient manner and we are suc-

cessful in securing meaningful developing country participation as well as effective international trading, and the Clean Development Mechanism in future negotiations. That potential small net premium, even excluding the benefits of mitigating climate change, in effect, purchases a partial insurance policy against a serious environmental threat.

Because the results from any model must be treated with caution, the Administration has employed a broad set of economic tools to assess the Kyoto Protocol. We have drawn on the insights of a wide range of models of the energy sector and economy over the next 25 years, including but not limited to the results of the Stanford Energy Modeling Forum exercises, the IPCC's review of the economic and social dimensions of climate change, the work of the OECD on Economic Dimensions and Policy Responses to Global Warming, and the staff-level Interagency Analytical Team analysis produced last year. Other tools include simple relevant statistics, "meta-analyses" such as work by the World Resources Institute, models, and basic economic reasoning. Drawing on this broad array of analytical tools is crucial to an intelligent evaluation of the policy alternatives.

To our knowledge, no model—whether used inside the government or not—has yet been set up to analyze the implications of the Kyoto Protocol, since this agreement is only a few months old and remains unfinished. In particular, no model is currently designed to assess Kyoto's treatment of sinks, or all six greenhouse gases. Some model-builders outside the government tend to take as long as several years to incorporate changes in policy parameters into their models.

Our thinking has been informed, however, by simulations conducted with the Second Generation Model of Battelle Laboratories, one of the leading models in the field. The SGM is one of the models best positioned to analyze the role of international trade in emission permits, which we consider to be a critical element of the Kyoto Treaty. However, the SGM does not cover all six gases included in the Kyoto Protocol or include a role for sinks. We have used the SGM model as one input into our overall assessment of the Kyoto treaty, but have attempted to supplement its results with additional analysis to account for such special features of the agreement as the inclusion of six gases, a possible trading arrangement that could include a subset of the Annex I countries and the Clean Development Mechanism. We will share with you today some preliminary results of this analysis. To the extent possible, we have compared results obtained with the SGM model with those of other modelling efforts.

Mindful of the limitations of any single model, we are eager to see features of the Kyoto Protocol assessed by other models to obtain a better feel for the range of possible effects. This work is just beginning and much of it will continue to go on outside the government. For example, the Energy Modeling Forum, based at Stanford University, is a long-running model comparison exercise involving many of the leading climate models. EMF is currently studying how features of the Kyoto legal language can be translated into terms recognizable to economic modelers. We expect that the group will conduct a full scale analysis of the Kyoto Protocol. The Energy Modeling Forum believes that its members will need at least until mid-year to update their results.

Assessing the Potential Costs of Emissions Reductions

I said in Congressional testimony last July that we can do this smart or we can do this dumb. I was referring to the point that the costs of cutting emissions can be much reduced if flexible, market-based mechanisms are used. Our economic analysis highlighted the importance of such flexible, market-based mechanisms—which are therefore reflected, at the President's insistence, in the Kyoto Protocol and our ongoing diplomatic strategy.

Within the Kyoto Protocol, this means an insistence on international trading, Joint Implementation, the Clean Development Mechanism, and, ultimately, on meaningful developing country participation. Domestically, this means that we implement any emissions reductions through a market-based system of tradable emissions permits, which ensures that we achieve reductions wherever they are least expensive. But this also means taking serious and responsible steps in the short run to prepare us to meet our obligations in the longer term.

The first such step is the inclusion in this year's budget of an aggressive, \$6.3 billion program of tax cuts and R&D investments—\$1.3 billion more than the \$5 billion package the President promised in his October 22 speech on this issue. The goal is both to stimulate the development of new energy-saving and carbon-saving technologies and to encourage the dissemination of those that exist already. The proposed package contains \$3.6 billion over the next 5 years in tax cuts for energy efficient purchases and renewable energy, including tax credits of \$3,000 to \$4,000 for

consumers who purchase highly fuel efficient vehicles, a 15 percent credit (up to \$2,000) for purchases of rooftop solar equipment, a 20 percent credit (subject to a cap) for purchasing energy-efficient building equipment, a credit up to \$2,000 for purchasing energy-efficient new homes, an extension of the wind and biomass tax credit, and a 10 percent investment credit for the purchase of combined heat and power systems. The package also contains \$2.1 billion over the next 3 years in additional research and development investments—covering the four major carbon-emitting sectors of the economy (buildings, industry, transportation, and electricity), plus carbon removal and sequestration, Federal facilities, and cross-cutting analyses and research. One example of the R&D effort is the Partnership for a New Generation of Vehicles (PNGV). PNGV is a government-industry effort to develop attractive, affordable cars that meet all applicable safety and environmental standards and get up to three times the fuel efficiency of today's cars. In FY 99, the combined proposal for PNGV is \$277 million, up from \$227 million appropriated in FY 98. Similar government-industry efforts are proposed to develop more efficient diesel engines for both light trucks and heavy trucks.

A second responsible step entails industry-by-industry consultations to prepare emission reduction plans in key industrial sectors. The Administration will work in partnership with industry to identify ways in which the Federal government might remove regulatory hurdles that discourage energy efficiency. In addition, DOE will spearhead a comprehensive effort to improve the energy efficiency of the Federal government's own operations and purchases.

The third step is the promotion of an environmentally-responsible electricity restructuring bill, which the President identified as part of his domestic climate change package in his address to the National Geographic Society on October 22. An electricity sector freed from government regulation would be a more efficient energy sector. Costs to consumers would fall. In addition, stronger incentives for improved generation efficiency in conjunction with appropriate market based provisions could achieve modest reductions in emissions. A reasonable overall estimate of the contribution of federal electricity restructuring to the rest of the President's program to address climate change is that it would make further progress to the same emission reduction goals at a cost saving of roughly \$20 billion per year. These steps should be taken regardless of Kyoto, because they make sense in terms of energy efficiency. But they have the added benefit of preparing us for Kyoto.

Estimated Reduction in Costs from Annex I Trading

In the language of the treaty, "Annex I," is the set of countries that have agreed to take on binding limitations in emissions of greenhouse gases. Even without meaningful developing country participation—which, again, the President has emphasized is essential before the treaty would be submitted for ratification—costs could be reduced substantially by emission trading among the Annex I countries. To provide some indication of the possible efficiency improvements, Russia and Ukraine consume six times as much energy per dollar of output as does the United States. Such large international differences in energy efficiency suggest that adoption of existing U.S. technology would yield very large emissions reductions in these countries.

Estimates derived from the SGM model confirm that emissions trading among Annex I countries can reduce the cost to the United States of achieving its targets for 2008–2012 emissions by about half relative to a situation in which such trading was not available. This concept of costs is meant to capture aggregate resource costs to the US economy, including the cost to domestic firms of purchasing emission permits from other countries where emission reductions may be cheaper than in the United States. Although these estimates reflect idealized international trading in efficient markets, the overall conclusion is clear. The dramatic reduction in costs potentially available from Annex I trading within the SGM model—cutting the costs involved by half—highlights why the President insisted that international trading be part of the Kyoto Protocol; and why its achievement by our negotiators in Kyoto was such an important accomplishment.

Estimated Reduction in Costs From Umbrella Trading

One possibility that emerged in Kyoto, which none of us foresaw, was the idea developed there by the U.S. delegation that the United States might undertake trading with a subset of Annex I countries, dubbed the "umbrella". Countries that have expressed interest in the umbrella include the United States, Australia, Canada, New Zealand and Russia, with strong indications of interest from some others. This subset of Annex I countries shares a common interest in promoting market-based mechanisms, most specifically, fully flexible rules for international trading of emissions permits.

It is too early to state the precise form the umbrella will take. But we can envision a number of potential benefits. The umbrella could, for example greatly reduce costs to the U.S. Results that we have derived from various SGM simulations of efficient international trading suggest that, relative to the situation in which there is no trading at all, the umbrella can reduce costs by an estimated 60–73 percent, depending on whether the former Warsaw Pact countries fall within the umbrella. The Kyoto Protocol classifies these countries outside of the EU bubble for the first budget period 2008–2012.

Estimated Reduction in Costs From Developing Country Participation

The next consideration is participation by developing countries. The President has said that he will not submit the treaty for ratification without meaningful participation by key developing countries. Such participation would further reduce the costs involved.

The substantial potential gains from meaningful developing country participation are highlighted by the significant benefits that will likely accrue from the limited role that the developing countries have already agreed to: the Clean Development Mechanism (CDM), modeled after the U.S. joint implementation concept. The CDM cannot realistically be expected to yield all the gains of binding targets for developing countries, but it might shave costs by roughly another 20 to 23 percent from the reduced costs that result from trading among Annex I countries.

Another possibility is that we persuade some of the key developing countries that are the largest emitters to commit to targets, and allow us to buy emission reductions from those paths. Simulations with the SGM model suggest that full participation by non-Annex I countries could cut roughly 55 percent off the reduced costs that result from Annex I trading. The actual cost reduction would depend on the extent of developing country participation that is ultimately obtained as well as the effectiveness of international trading arrangements. The more developing countries that take on modest binding targets and trade in international permit markets, the lower will be costs.

These cost-saving opportunities are fundamental tenets of the U.S. position. The promise of Kyoto cannot be achieved without effective emissions trading. Moreover, if we do not get meaningful participation by key developing countries, we won't submit the treaty for ratification to the Senate. So, while our analysis may be predicated on some ambitious conditions concerning trading and developing country participation, it is exactly those conditions that form the foundation of the U.S. position in international negotiations including those at Buenos Aires.

Accounting for Carbon Sinks

The preceding discussion has emphasized the importance of trading arrangements and the CDM. In reaching an overall economic assessment, it is also important to factor in the potential role of carbon sinks. Again, the U.S. delegation obtained a novel concept, that carbon absorbing activities called sinks could be used to offset emissions. The arrangements concerning carbon sinks in the Kyoto Protocol have received less attention than they merit. The Kyoto Protocol specifies that removals of CO₂ by sinks count toward meeting the target. The Kyoto Protocol counts the net emissions effects of three sink activities—afforestation, reforestation, and deforestation. Very preliminary estimates of the implications for the United States of the Kyoto provision on sinks indicate that carbon sinks could comprise a significant portion of the total required emissions reductions. Moreover, decreasing the required emissions reduction by, for example, 10% would likely result in cost-savings greater than 10%.

Even this estimate of the effect of sinks is conservative in one respect: it is based on an assumption for sink activity in the U.S. over the 2008–2012 period, and no assumed benefits from sinks elsewhere in the world. Very preliminary estimates suggest that incorporating the gains from sinks throughout the world can substantially reduce the costs of meeting the Kyoto target, on top of the gains from trading among Annex I countries. (Furthermore, no model has yet even tried to take into account that government policies can help increase the activities qualifying as allowable sinks, like some tree-planting.) Because the quantitative uncertainty is so large, we do not yet have an estimate with which we are comfortable. But we expect that complete modelling of the Kyoto provision pertaining to sinks will likely have favorable and potentially large effects on projected costs.

Accounting for the Role of Improvements in Energy Efficiency

Another issue in analyzing the Kyoto protocol concerns future improvements in energy efficiency due to innovation and diffusion of existing technology. The parameter that figures most prominently in analysis of energy efficiency is the rate of improvement in the so-called Autonomous Energy Efficiency Index (AEEI), that is the

rate at which the total use of energy falls relative to GDP. A plausible assumption on the AEEI is an improvement of 1.0 percent per year. Reflecting a conservative interpretation of the 15-year impact of various climate change initiatives, this is only a small increase above the 0.9 percent number in the Energy Information Administration's Annual Energy Outlook. That assumption is not the most optimistic outcome that might occur. Some authorities in the field of energy policy forecast more rapid technological progress. Experts at five national laboratories managed by the Department of Energy, using an engineering approach rather than an economic paradigm, found that a third of the emissions reductions necessary to return to 1990 levels by 2010 could be achieved through the adoption of existing energy-efficient technologies at no net resource cost, or even some savings. The National Academy of Sciences reached qualitatively similar conclusions in a 1992 report.

The President's FY 1999 budget, as I have noted, includes a \$6.3 billion package of tax cuts and R&D investments intended to spur the discovery and adoption of new technologies. If the Administration is successful in this effort, the rate of improvement in energy efficiency could rise and such improvements would lower the cost of meeting our Kyoto target. For example, published results based on SGM model simulations with different assumed rates of AEEI suggest that an increase in the AEEI of 25 percent could lead to declines in the permit price of approximately 40 percent.

Our justification for incorporating into our assessment a small assumed impact of Administration technology policies is somewhat analogous to the Administration's rationale for employing mainstream economic assumptions in our budget forecasts: in the presence of uncertainty, we are conservative in our estimates of the speed with which the economy will grow, tax receipts will rise, and the budget will improve. That way, any revisions or surprises that occur are likely to be in the pleasant direction. In this instance, we prudently and conservatively assume that there will be substantial delays between investments in new technology or the diffusion of existing technology, and the returns to such investments.

Moreover, at the recent automobile show in Detroit, General Motors announced that it has developed a hybrid-based vehicle that can achieve fuel efficiency of 80 miles per gallon, and that this car could be in commercial production within a few years. Ford also exhibited a prototype of a light-weight highly fuel efficient sedan that could be in commercial production by the middle of the next decade. These announcements followed an earlier breakthrough announced by DOE and its partners of a fuel cell that could run on gasoline and double current fuel economy while reducing conventional air pollution emissions by 90 percent. These technological advances have been made possible through the efforts of the Partnership for a New Generation of Vehicles between the Administration and the U.S. auto companies and their suppliers.

Such progress may be replicated in other sectors. VCRs and TVs, while switched off, consume about \$1 billion worth of electricity annually. EPA has established a partnership with major manufacturers that has a goal of achieving up to a 70 percent reduction in energy use by VCRs and TVs while they are switched off, without sacrificing product quality, usefulness, or increasing costs. This partnership offers promise of substantial improvements in energy efficiency.

Non-Climate Benefits

A final factor that should be included in any comprehensive assessment of the economic implications of the Kyoto protocol are the benefits of the agreement. The literature has emphasized that any relative price shifts that prove necessary to reduce emissions should produce non-climate benefits in three areas: traffic congestion, highway accidents, and air pollution unrelated to climate change. These benefits are hard to quantify precisely but are potentially significant; our rough estimates suggest that these three benefits could offset approximately a quarter of the resource cost of the climate change policy.

Synthesis

A comprehensive evaluation of the economic impact of the Kyoto Protocol must integrate all of the factors described above: reliance on flexible market-based mechanisms domestically; international trading and Joint Implementation among Annex I countries; the Clean Development Mechanism; meaningful developing country participation; the potential cost-mitigating role of including six gases and carbon sinks; the benefits of electricity restructuring; and emissions reductions achieved as a consequence of other proposed Administration climate change initiatives. Assuming that effective mechanisms for international trading, Joint Implementation and the Clean Development Mechanism are established, and assuming also that the U.S. achieves meaningful developing country participation, our overall assessment is that

the economic cost to the United States in aggregate and to typical households of attaining the targets and timetables specified in the Kyoto Protocol, will be modest.

This conclusion that the impact will be modest is not entirely dependent upon, but is fully consistent with, formal model results. I have previously emphasized the limitations of relying on any single model in assessing the economic impact of the Kyoto Protocol, and continue to view any such results as just one input into an overall analysis. But it is worth emphasizing that model results reflecting the details of the Kyoto Protocol are consistent with our conclusion. For example, under the assumptions of either trading under the umbrella or within Annex I, the CDM and permit trading with developing countries, estimates derived using the SCM model, which adjust for the inclusion of six gases and assume little banking of credits beyond 2012, suggest that the resource costs of attaining the Kyoto targets for emission reductions might amount to \$7 to \$12 billion per year in 2008 to 2012. This implies that overall costs, excluding not only climate and non-climate benefits, but also such cost mitigating factors as sinks and payoffs from the President's electricity restructuring and climate change initiatives, would reach roughly one-tenth of one percent of projected GDP in 2010.

A more tangible measure of costs is the estimated effects on energy prices. Excluding the impact of electricity restructuring and the ancillary benefits of mitigation and better forest management, the SGM-based estimate, corresponding to the gross resource cost estimate cited above, is an emissions price in the range of \$14 to \$23 per ton of carbon equivalent. This translates into an increase in energy prices between 2008 and 2012 at the household level of between 3 and 5 percent, an increase in fuel oil prices of about 5 to 9 percent, natural gas prices of 3 to 5 percent, gasoline prices of 3 to 4 percent (or around 4 to 6 cents per gallon), and electricity prices of 3 to 4 percent. This increase in energy prices at the household level would raise the average household's energy bill in ten years by between \$70 and \$110 per year, although such predictions may not be observable because they would be small relative to typical energy price changes, and nearly fully offset by electricity price declines from Federal electricity restructuring. In particular, this increase in energy prices is small relative to the average of year to year real energy price changes experienced by U.S. consumers since 1960: such annual changes have averaged 3–8 percent. In addition, by 2008–2012, the anticipated 10 percent decline in electricity prices from the restructuring that is part of our climate change agenda is projected to lead to expenditure reductions of about \$90 per year for the average household.

As highlighted earlier, there are substantial but unavoidable uncertainties surrounding estimates like these. For example, the estimate just discussed is predicated, among other things, on the developing country participation that we are insisting upon as a condition for our ratifying the Kyoto Protocol, but which is not yet part of that Protocol, and on effective international trading. Moreover, other models will yield other answers and much work remains to be done by the modeling community to test the robustness of these results. Preliminary comparisons of the SGM model to the few other models that have attempted to evaluate the Kyoto accord, suggest that its predictions concerning the impact of the Kyoto Protocol on carbon permit prices are neither the most conservative nor the most optimistic of the models that have been developed. The predictions of the SCM model are robust in the sense that virtually all energy models reveal the potency of effective, flexible, domestic and international trading mechanisms to reduce substantially the cost and energy price impact of meeting the Kyoto targets.

Of course, the most important factor that has been left out of the above assessment is the benefit of mitigating climate change itself. A full cost-benefit analysis would include mitigation in the benefits column. The only reason we have not done so, explained repeatedly above, is the difficulty in coming up with a number to capture the monetary benefits. But nobody should lose sight of our ultimate objective—keeping our planet the hospitable home that we enjoy today.

Effects on Employment and Aggregate Output

So far we have said nothing about job losses resulting from climate change policy. Although there may be job gains in some sectors and job losses in others, we do not anticipate any significant aggregate employment effect if we achieve the conditions we have discussed. The effects on energy prices described above will occur only 10 to 14 years in the future. Not only are these effects small relative to historical variations in energy prices, and offset by other policies like electricity restructuring, they would occur sufficiently far in the future to enable monetary policy to keep the economy operating at its potential. In energy-intensive sectors some employment reduction could occur, although given the very small predicted change in energy prices, impacts in most such sectors are apt to be minimal. Furthermore, a large number of jobs will be created in other sectors—many of them high-tech jobs paying

high wages. The President is finally committed to assisting any workers who are adversely affected during the transition to a climate-friendly economy.

Conclusion

In conclusion, the Kyoto Protocol and the President's general approach to climate change reflect the insight of economic analysis. The Kyoto Protocol includes key provisions on international trading and Clean Development projects. The President's approach relies on market incentives—first, with a system of tax cuts and R&D investments, and then later with a market-based system of traceable permits—to ensure that our objectives are achieved as efficiently as possible.

Our overall conclusion is that the economic impact of the Protocol will be modest under the conditions we have identified. The purpose of this testimony has been to explain the reasoning underlying this conclusion, which draws insights from not only the forecasts of individual models, any one of which has its own strengths and limitations, but also a broad variety of additional analyses.

I look forward to continuing to work with members of this Committee, as well as other interested parties, in further analyzing the Kyoto Protocol and evaluating the net effects of reducing greenhouse gas emissions. It is my hope that economic analysis will continue to play a key role in designing policies in this area.

I welcome your questions.

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