ENERGY DEVELOPMENT ON THE OUTER CONTINENTAL SHELF AND THE FUTURE OF OUR OCEANS

JOINT OVERSIGHT HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY AND MINERAL RESOURCES

JOINT WITH THE

SUBCOMMITTEE ON INSULAR AFFAIRS, OCEANS AND WILDLIFE

OF THE

COMMITTEE ON NATURAL RESOURCES
U.S. HOUSE OF REPRESENTATIVES

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JOINT OVERSIGHT HEARING ON "ENERGY DEVELOPMENT ON THE OUTER CONTINENTAL SHELF AND THE FUTURE OF OUR OCEANS."

Tuesday, March 24, 2009
U.S. House of Representatives
Subcommittee on Energy and Mineral Resources, joint with the Subcommittee on Insular Affairs, Oceans and Wildlife
Committee on Natural Resources
Washington, D.C.

The Subcommittees met, pursuant to call, at 10:05 a.m. in Room 1324, Longworth House Office Building, Hon. Madeleine Bordallo, Chairwoman of the Subcommittee on Insular Affairs, Oceans, and Wildlife, presiding.

Present from the Subcommittee on Insular Affairs, Oceans, and Wildlife: Representatives Braun, Lamborn, Young, Gohmert, Chaffetz, and Cassidy.

Present from Subcommittee on Energy and Mineral Resources: Representatives Costa, Inslee, Markey, Kildee, Abercrombie, Holt, Sablan, Capps, and Shea-Porter.

STATEMENT OF MADELEINE Z. BORDALLO, A DELEGATE IN CONGRESS FROM THE TERRITORY OF GUAM

Ms. BORDALLO. Good morning, everyone. The joint hearing by the Subcommittee on Insular Affairs, Oceans, and Wildlife, and the Subcommittee on Energy and Mineral Resources will come to order.

Today we will hear testimony concerning energy development in the Outer Continental Shelf, and the future of our oceans.

Because this is a joint hearing, the two Subcommittee Chairs and the two Ranking Minority Members will be making opening statements. Other Members are invited to submit their statements for the record.

The Subcommittees meet this morning to hear testimony on two issues related to energy development in the Outer Continental Shelf, or the OCS. Specifically, witnesses will testify on the potential environmental and known impacts of energy development, and the need for careful planning and ecological assessments to guide our energy development, be it traditional or alternative energy in the OCS.

This is the sixth in the series of hearings that the Committee on Natural Resources and the Subcommittee on Energy and Mineral Resources have held on this issue since the convening of the 111th

Congress in January. Throughout these hearings we have heard from a broad range of witnesses, including government agencies, conservationists, coastal states, fishermen, oil companies, tourism bureaus, scientists, and the U.S. Chamber of Commerce.

Some of our witnesses oppose further oil and gas development in the OCS, but support development of renewable energy. Some support more drilling, as one of a suite of energy options; and some are somewhat ambivalent on the topic of drilling altogether, but believe any energy development that occurs must be done in a very thoughtful manner, looking at and carefully balancing all uses of the OCS. Today's hearing will explore that last point in greater detail.

As many of you recognized, today is the 20th anniversary of the Exxon Valdez, a terrible accident that had long-term and far-reaching impacts on our environment. And that must never, ever be repeated.

There is no question that improvements have been made since then, not only in our tankers used to transport oil—but also in operations to avoid spills, and responses to spills when they do occur.

There will always be risks; however, no matter how far we have come, there are some areas that are too sensitive to risk to oil and gas development, or maybe even for other forms of energy development. They are too sensitive, perhaps, because they provide critical habitat for valuable fish stocks or populations of endangered marine mammals. Or there may be areas that are too sensitive because they are close to coral reefs.

It is our responsibility, therefore, to ensure that we protect these important habitats and marine resources as we look to explore options for increasing our energy independence through energy development of many kinds in the OCS.

While I recognize that there are many who would like to see the moratorium on offshore drilling reinstated, the new Administration has made clear that some drilling will be a part of our broader national energy strategy as we move forward.

Our challenge then is to ensure that new drilling, or any energy development in the OCS, is done responsibly, and provides the greatest energy and economic benefit with the fewest environmental impacts possible. This is why the comprehensive planning ideas being discussed by some of our witnesses here today make so much sense.

In order to make responsible energy development decisions in the OCS, we need to know not only where the greatest energy resources are, but also where the most critical fisheries and marine mammal habitats are; where other important ecologically sensitive areas are located, and the current uses of the ocean's areas in question.

When this information is considered in a comprehensive manner and impacts are assessed, instead of planning on a project-by-project basis, we can streamline energy development efforts, reduce conflicts, and ensure the long-term conservation of our living marine resources, and the health of our oceans. This is the energy strategy I believe that we should be aspiring to in the OCS.

And now, as Chairman of the Subcommittee, I recognize Mr. Brown, our Ranking Republican Member of the Insular Affairs,

Oceans and Wildlife Subcommittee, for any statement that he may have.

[The prepared statement of Ms. Bordallo follows:]

Statement of The Honorable Madeleine Z. Bordallo, Chairwoman, Subcommittee on Insular Affairs, Oceans and Wildlife

The Subcommittees meet this morning to hear testimony on two issues related to energy development in the Outer Continental Shelf, or the OCS. Specifically, witnesses will testify on the potential environmental and known impacts of energy development and the need for careful planning and ecological assessments to guide our energy development—be it traditional or alternative energy—in the OCS.

This is the sixth in a series of hearings that the Committee on Natural Resources and the Subcommittee on Energy and Mineral Resources have held on this issue since the convening of the 111th Congress in January. Throughout these hearings, we have heard from a broad range of witnesses including government agencies, conservationists, coastal states, fishermen, oil companies, tourism bureaus, scientists, and the U.S. Chamber of Commerce. Some of our witnesses oppose further oil and gas development in the OCS, but support development of renewable energy. Some support more drilling as one of a suite of energy options, and some are somewhat ambivalent on the topic of drilling altogether, but believe any energy development that occurs must be done in a thoughtful manner, looking at and carefully balancing all uses of the OCS. Today's hearing will explore that last point in greater detail.

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Too sensitive, perhaps, because they provide critical habitat for valuable fish stocks or populations of endangered marine mammals. Or there may be areas that are too sensitive because they are close to coral reefs. It is our responsibility to ensure that we protect these important habitats and marine resources as we look to explore options for increasing our energy independence through energy development of many kinds in the OCS.

While I recognize that there are many who would like to see the moratorium on offshore drilling reinstated, the new Administration has made clear that some drilling will be a part of our broader, national energy strategy as we move forward. Our challenge, then, is to ensure that new drilling or any energy development in the OCS is done responsibly, and provides the greatest energy and economic benefit with the fewest environmental impacts possible.

This is why the comprehensive planning ideas being discussed by some of our witnesses here today make so much sense. In order to make responsible energy development decisions in the O-C-S, we need to know not only where the greatest energy resources are, but also where the most critical fisheries and marine mammal habitats are, where other important ecologically sensitive areas are located, and the current uses of the oceans areas in question.

When this information is considered in a comprehensive manner and cumulative impacts are assessed, instead of planning on a project by project basis, we can streamline energy development efforts, reduce conflicts, and ensure the long term conservation of our living marine resources and the health of our oceans. This is the energy strategy I believe we should be aspiring to in the OCS.

STATEMENT OF HENRY E. BROWN, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF SOUTH CAROLINA

Mr. BROWN. Thank you, Madame Chair. I am sure it is not a coincidence that this oversight hearing was specifically scheduled on the 20th anniversary of the Exxon Valdez oil spill in Prince William Sound, Alaska.

This spill involved the loss of 257,000 barrels of unrefined crude oil, and it occurred when that massive vessel ran aground on Bligh Reef.

While there is no one that believes that oil and water mix, it is critical if we examine the facts not to rely on the emotions or misrepresentations that frequently appear in the media.

It is a fact that prior to the enactment of the Oil Pollution Act of 1990, transportation accidents, involving primarily foreign tankers, like the Exxon Valdez, were directly responsible for nearly 45 percent of all oil spills in that ocean.

While this figure has significantly declined, it is a fact that tanker accidents account for most of the world's largest oil spills. In fact, according to the Oil Spill Intelligence Report, of the 66 spills in which at least 10 million gallons of oil were lost, 48 of those spills were from tankers.

The National Academy of Sciences has concluded that the major sources of oil in our ocean are, number one, natural seepage; municipal industrial runoff; marine transportation, recreational marine vessels; and offshore oil and gas development. In fact, this report notes that the Federal OCS program accounts for less than 2 percent of the total amount of oil spilled in U.S. waters.

In the past 40 years, only 872 barrels of oil have been spilled off the coast of California. By contrast, about 70,000 barrels of oil seep into California's coastal waters each year, which coincidentally represents the amount spilled in the Union Oil blowout in Santa Barbara in 1969.

I would like to submit for the record the recent report from the American Chemical Society, entitled, 'Weathering in the Fallout Plume of Heavy Oil from Petroleum Seeps Near the Coal Oil Point, California.' This report study seeps off the coast of California, which is estimated to release 20 to 25 tons of oil daily. This sediment oil burden in this study area is equivalent to between eight to 80 Exxon Valdez oil spills.

Sadly, all of this seeping oil could be reduced, if not eliminated, by developing these areas. Despite these facts, we continue to hear horror stories and predictions of catastrophic doom. If the Federal OCS program is allowed to explore the regions which were previously covered by a Congressional moratorium, the facts do not support the hysteria.

What you do not hear much about is the fact that in the past 40 years, 1.1 billion barrels of oil and 1.6 trillion cubic feet of natural gas have been produced off the coast of California with little, if any, environmental damage. In short, the Federal Outer Continental Shelf Program has an excellent environmental record. It is our safest energy extraction program. The technology of exploration and development is far superior to what existed 40 years ago, and petroleum companies now have the ability to safely explore even the harshest ocean environments.

It is tragically ironic that we continue to use tanker spills as an excuse not to allow OCS development, and that by not producing certain areas, we continue to allow our oceans and beaches to be fouled by oil naturally seeping to the surface.

It is for this reason I will continue to strongly argue that it is in our nation's best interests to explore and develop the 86 billion barrels of oil and 400 trillion cubic feet of natural gas that is expected to exist on the Federal OCS. To deny the American people these energy resources is simply illogical, shortsighted, and wrong.

Madame Chairwoman, I ask unanimous consent to submit for the record the letter written in support of OCS development by the Myrtle Beach Area Chamber of Commerce. Like California, we have pristine, beautiful beaches that are visited by millions of people each year. I believe it is a false choice to argue that you cannot have beautiful beaches and environmentally safe offshore energy development.

Thank you, Madame Chairwoman. Before I yield back the balance of my time, I would like to introduce one of the presenters, Mr. Josh Eagle, from the great city of Columbia, South Carolina, and the great University of South Carolina Law School. Glad to have you here.

Ms. BORDALLO. For the report, no objection, so ordered.

Mr. BROWN. Thanks.

[The prepared statement of Mr. Brown follows:]

Statement of The Honorable Henry E. Brown, Jr., Ranking Republican Member, Subcommittee on Insular Affairs, Oceans and Wildlife

Thank you, Madam Chairwoman. I am sure it was not a coincidence that this oversight hearing was specifically scheduled on the 20th Anniversary of the Exxon Valdez oil spill in Prince William Sound, Alaska.

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While this figure has significantly declined, it is a fact that tanker accidents account for most of the world's largest oil spills. In fact, according to the Oil Spill Intelligence Report: Of the 66 spills in which at least 10 million gallons of oil were lost, 48 of those spills were from tankers.

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In the past 40 years, only 872 barrels of oil have been spilled off the coast of California. By contrast, 70,000 barrels of oil seep into California coastal waters each year which coincidentally represents the amount spilled in the Union Oil blowout in Santa Barbara in 1969. I would like to submit for the Record a recent report from the American Chemical Society entitled: "Weathering and the Fallout Plume of Heavy Oil from Petroleum Seeps Near Coal Oil Point, CA." This report studies seeps off the coast of California which are estimated to release 20 to 25 tons of oil daily. This sediment oil burden in the study area is equivalent to between 8 to 80 Exxon Valdez oil spills. Sadly, all of this seeping oil could be reduce, if not, eliminated by developing these areas.

Despite these facts, we continue to hear horror stories and predictions of catastrophic doom, if the federal OCS Program is allowed to explore the regions which were previous covered by a Congressional moratoria. The facts do not support this hysteria.

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It is for this reason that I will continue to strongly argue that it is in our nation's best interest to explore and develop the 86 billion barrels of oil and 420 trillion cubic feet of natural gas that is projected to exist on the federal OCS. To deny the American people these energy resources is simply illogical, shortsighted and wrong.

Madam Chairwoman, I ask unanimous consent to submit for the Record a letter written in support of OCS development by the Myrtle Beach Area Chamber of Commerce. Like California, we have pristine beautiful beaches that are visited by millions of people each year. I believe it is a false choice to argue that you cannot have beautiful beaches and environmentally safe offshore energy development.

Thank you, Madam Chairwoman.

[NOTE: The report and letter submitted for the record have been retained in the Committee's official files.]

Ms. BORDALLO. I thank the gentleman from South Carolina.

Before I recognize our next speaker, those standing in the back, I would like to invite you to take some of the chairs here on the lower level. Thank you.

And I would now like to recognize the gentleman from California, Mr. Costa, the Chairman of the Energy and Minerals Subcommittee. Mr. Costa.

STATEMENT OF JIM COSTA, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. COSTA. Thank you very much, Madame Chairwoman, for holding this joint committee hearing with both Subcommittees. I think we obviously, as members of the Natural Resources Committee, have overlapping interests. And we see this morning in a case in point where those overlapping interests come together. I think it is productive and a good use of our time for both Subcommittees, in fact, to therefore hold this hearing together on this topic. It is the sixth hearing that the Natural Resource Committee has held on related subject matter.

I know last year there was a lot of concern on how we were attempting to make offshore oil policy in the absence of real hearings on the subject. And I have already commented a number of times that a lot of the discussion seemed to me to simply refrain toward sloganeering. I simply don't believe that is a way in which you can have an honest debate and discussion of a public policy issue of this importance.

Certainly in the case of the last two months, Madame Chairwoman, we have, I think, demonstrated that we do want to give thoughtful consideration as a result of the hearings that the Natural Resources Committee has been holding over the last two months.

Frankly, obviously cooperation, instead of shouting slogans at one another, is what we have to do if we are going to craft solutions that focus on one of our nation's most pressing problems. And that is, putting together a comprehensive energy package, one that has remained elusive going all the way back to President Nixon in 1973, when some of us can remember the first gas lines began forming. And of course, since that time every President, regardless of their persuasion, has attempted to forge an energy policy, and Congress has attempted to act on an energy policy.

And yet it remains elusive in terms of our ability to come together to form that sort of comprehensive energy policy. As a matter of fact, in those first gas lines in 1973, 30 percent of our energy

was imported from foreign sources; and today, that number is much closer to 70 percent.

So clearly, notwithstanding 40-plus years of debate and discussion, we have yet to come up with that sort of bipartisan comprehensive effort.

As you noted, Madame Chairwoman, this is the 20th anniversary of the Exxon Valdez spill. It had a tremendous impact on the coasts of Alaska. We all remember the pictures of the impacts of that spill. I have been to Valdez, I have seen the coastal areas that were impacted. And clearly, many lessons have been learned from that.

But I think we clearly need to know that how we apply those lessons. For example, in California we started requiring that all tankers that bring oil to California, which is the primary source of how California gets its oil that we refine from Alaska, be in double-hulled tankers. We have made improvements in our navigational and aid systems. We have tried to take lessons from the past by using them to plan for how we do it in the future, how it will make it more environmentally sound, and so that we don't have such an accident in the future.

I think planning is therefore a critical part of a comprehensive energy plan. And the panel that we are going to hear this morning is going to give us their best thoughts, I hope, on how we can better plan.

I am a supporter of expanding the oil and gas production, both on and offshore. I am one that believes that these resources have been able to be used safely, and of benefit for all Americans. Not only from the standpoint of the energy that we derive, whether it be oil or gas, but from the royalties that we receive that are the second-largest source of revenues to our nation's Treasury.

So therefore, you know, the discussion and the debate in both panels are going to be important today, as the entirety of the hearings that we are holding. Too much of our past offshore drilling policy I think, in the recent decades, has simply been no. But my view is that we can craft a policy if we look at all the energy tools in our energy toolbox.

There can be more than a nuance policy to in effect put together an effort that involves comprehensive planning. The stakeholders that we hear here this morning and that we have heard in the past I think are providing appropriate information on how we use oil and gas drilling, both onshore and offshore.

But how we can use wind energy on our oceans, how we can use wave energy. And what other potential sources of energy can be derived with a balanced plan on our coasts.

So therefore, I don't think we should be drawing lines in the ocean or in the sand. But rather, we should be basing our decision on sound science and a comprehensive understanding of what our nation's energy needs are, both in the near term and the long term.

I think we need to take a careful comprehensive approach to the risk assessment versus the risk management, therefore comparing the analysis in terms of what energies provide the most potential, what the assessment of the risk is by utilizing those energies.

Certainly the risks involved with tanker traffic we know well. They have been demonstrated. We have attempted to try to better manage those risks, and minimize the potential impacts, not only

for our beaches, but our fishing industry and other natural resources, while still ensuring that Americans get the energy that we need.

We know, as was cited by one of the, the Ranking Member, that nonpoint-source pollution is the largest source of contamination that takes place, not just in oceans off the coast of the United States, but throughout the world. And so we need to do a comparative analogy on how we can do a better job on those nonpoint-source areas of pollution. In California, we have done a great deal in that area.

But I would also like to thank our witnesses here, Madame Chairwoman. I want to thank you for holding this hearing with both Subcommittees. We look forward to the testimony, and seeing how we can put together, by the full committee, a comprehensive energy policy that focuses on using all the energy tools in our energy toolbox in the near term; the midterm, which is defined by 10 to 20 years; and the long term, which is in excess of 20 years. Those strategies will have to come together if we are going to put together the comprehensive energy policy that the President has asked us to work on.

I thank you very much.

[The prepared statement of Mr. Costa follows:]

Statement of The Honorable Jim Costa, Chairman, Subcommittee on Energy and Mineral Resources

Thank you very much, Madame Chairwoman, and thank you for holding this joint hearing with our subcommittee. This is now the third hearing that my subcommittee has held on this topic, and the sixth that we have had in the Natural Resources Committee. I know last year there was some concern that we were trying to make offshore policy in the absence of real hearings on this subject, and I believe that we have alleviated those concerns over the past two months.

I also hope we are moving towards alleviating the concerns that exist over the policy itself. I believe these hearings have been very productive, very insightful, and very cooperative. Instead of people shouting slogans at one another, we have members of both parties trying to come together to craft solutions to some of our nation's most pressing problems. I believe it is what we should strive for on every issue that comes before this Congress, and I hope it has helped to set the tone for our subcommittees as we move forward.

As you pointed out, Madame Chairwoman, today is the 20th anniversary of the Exxon Valdez oil spill—a tremendous environmental tragedy of almost immeasurable proportions. Those of us who saw the pictures coming in from Alaska after that spill will certainly never forget it. I am thankful that we have not had a spill of that magnitude or destructive impact in the 20 years since.

But I do not believe that is simply a result of luck. It is because we learned lessons from the Valdez, lessons that we applied to how tankers get built, how we respond to spills, and how we operate more carefully to ensure it never happens again. For example, in California we started requiring that all tankers that bring Alaskan crude oil into our state be double hulled, and made improvements in our navigational aid system. Taking these lessons from the past and using them to plan what we do and how we do it in the future will help us be more environmentally sound while still being able to meet our nation's energy needs. It is this idea of planning, thoughtful planning, that our first panel is here to discuss.

I am a supporter of expanding the amount of oil and gas production that we do on the outer Continental Shelf. I believe there are large resources out there that we can develop cleanly and safely, and for the benefit of all Americans. But I also believe there are areas that are not appropriate for oil and gas development. It may be a region that does not have any resources, or it may be a region that does have resources, but is too environmentally sensitive for drill rigs to operate.

Too much of our past offshore drilling policy has just been a blanket "no". But we cannot craft a policy going forward unless we use all the energy tools in our energy toolbox, and offshore drilling is one of those tools. There can be a more nuanced policy, and it should involve a comprehensive planning process that brings

all stakeholders together, and identifies those areas that are appropriate for oil and gas drilling, appropriate for wind energy, for wave energy, or for other tools entirely. We should not draw arbitrary lines in the ocean, but rather we should base decisions on science and a comprehensive understanding of our nation's energy needs.

Also, I believe we have to take a careful and comprehensive approach to risk assessment and risk management. The risks involved with tanker traffic are, as the Exxon Valdez demonstrated, significant, and transportation of oil contributes far more oil to our oceans than exploration. So we have to assess these risks, and then we have to figure out how to manage those risks, so that we minimize the potential impacts on our beaches, on our fishing industry, and on other natural resources, while still ensuring that Americans get the energy that they need.

I would like to thank all of our witnesses for being here, and once again, Madame Chairwoman, I thank you for holding this hearing with me, and I look forward to working with you, and all the Members of this committee, so come up with the short, medium, and long-term energy strategies that our nation so desperately needs.

Ms. BORDALLO. I thank the gentleman from California. And again, I would like to repeat, those ladies and gentlemen standing in the rear, don't be shy. Please come forward, yes. This may be a lengthy hearing, and I am sure you are going to tire. Right up here. On this side, on this side here. If there isn't a nameplate, then you know that the seat is open. No nameplate, the seat is yours. Thank you, thank you very much.

I would like now to recognize the Ranking Member of the Committee on Energy and Minerals, the gentleman from Colorado, Mr. Lamborn.

STATEMENT OF THE HON. DOUG LAMBORN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Mr. LAMBORN. Madame Chairwoman and Mr. Chairman, thank you both for holding this hearing. This is now the sixth hearing on OCS development held this Congress. Today's hearing will give us a clearer understanding of the problems of the past and the hopes for the future.

I wanted to start by saying thank you to one of our witnesses here today. Mr. Brad Gilman will be testifying on behalf of Mayor Stanley Mack of the Aleutians East Borough later today.

If we had been given notice that this hearing was going to be all about Alaska and drilling in Alaskan waters, we would have had more success in actually having a witness from Alaska here today. Unfortunately, we weren't given notice that the focus of one full panel was on Alaska until very late last week.

I hope in the future we will have a clear notice about the intent of the hearings, so we can have time to identify the appropriate witness to address the subject of the hearing.

Instead of hearing from the Mayor, we are going to be hearing from Oceana once again. At the first OCS hearing of this year, we kept the Oceana witness so long we had to take a personal break for him. I hope we don't have to do that again today.

We will be talking today about oil spills. Now, for some reason we will not be hearing from the Minerals Management Service, MMS, today. It is the principal U.S. Federal agency responsible for oil spill research, response research, to fulfill oil spill regulatory responsibilities under the Oil Pollution Act of 1990. This includes the responsibility to manage the National Oil Spill Response Facility, OHMSETT.

For more than 25 years, MMS has maintained a comprehensive, long-term research program to improve oil spill response technologies. The major focus of the program is to improve the knowledge and technologies used for the detection, containment, and cleanup of oil spills that may occur on the OCS.

Nor will we be hearing today for some reason from the U.S. Coast Guard. They are the other agency with responsibility to respond to and manage oil spills.

Both of these Federal agencies would have helped this committee understand the challenges of addressing oil spills, but we will not have their testimony before us today.

Apparently the inspiration for today's hearing is that today is the 20th anniversary of the Valdez disaster in Alaska. Sadly, while we have learned a lot since this terrible disaster, we haven't learned one of the major lessons: Tankers are a terrible way to deliver oil.

America is more dependent now on tanker-transported oil than we were 20 years ago. We can free ourselves from this tanker-transported oil if we simply choose to develop our domestic resources.

We have vast reserves of oil off the California coast, so much that tons of it seep up from the ocean floor each day. We have tremendously rich deposits of oil shale in the West, which are calling for investment in research and development, if we can keep a clear set of rules in place for industry.

The lesson of the Valdez is that we should diversify our sources of oil beyond that brought to our shores by oil tanker. Let us use oil rigs, pipelines, and all the other, much safer ways of transporting oil.

We have heard a lot about oil spills before this committee this year. We have recognized that 40 years ago, we had spills off Santa Barbara, and today is the 20th anniversary of the Exxon Valdez.

Let us examine cell phones over a 40-year period. Forty years ago they didn't even exist. Twenty years ago they looked like military phones attached to backpacks. Today we have smart phones that have more computing power than the supercomputers of 1969. Today's phones are cameras, music players, internet browsers, word processors and, by the way, also phones.

The technological leap in the oil and gas industry and the ability to clean up oil spills has advanced just as much. I have heard from company executives that say they aren't in the drilling business, they are in the advanced technology business. This is important to keep in mind.

In closing, Madame Chairman and Mr. Chairman, I hope we can all agree that the old methods of failing to develop our resources in the OCS are not going to work any longer. We now find ourselves in a new era of opportunity where development of the OCS is on the horizon.

Development of oil and gas can be done in harmony with the development of wind and tidal energy, fishing and tourism. We have heard testimony that all these uses are compatible in the Gulf of Mexico, and we should expect no less from our other states.

Americans are worried about our standard of living. Oil prices are beginning to creep up as a result of monopolistic actions by

OPEC. We can free ourselves from oil tyrants, but only if we are willing to act and develop our own resources.

I thank you, and I look forward to hearing from our witnesses.

[The prepared statement of Mr. Lamborn follows:]

Statement of The Honorable Doug Lamborn, Ranking Member, Subcommittee on Energy and Mineral Resources

Mr. Chairman, thank you for holding this hearing. This is now the 6th hearing on OCS development held this Congress. Today's hearing will give us a clearer understanding of the problems of the past and the hopes for our future.

HEARING ISSUES

I want to start by saying thank you to one of our witnesses here today. Mr. Brad Gilman will be testifying on behalf of Mayor Stanley Mack of the Aleutians East Borough today. If we had been given notice that this hearing was going to be all about Alaska and drilling in Alaskan waters, we would have had more success in actually having a witness from Alaska here today. Unfortunately, we weren't given notice that the focus of one full panel was on Alaska until very late last week. I hope in the future we will have a clear notice about the intent of the hearings so we can have time to identify the appropriate witness to address the subject of the hearing.

Instead of hearing from the Mayor, we are going to hear from Oceana once again. At the first OCS hearing of this year we kept the Oceana witness so long we had to take a personal break for him, I hope we won't do that again today.

Furthermore, we will be talking about oil spills. For some reason we will not be hearing from the Minerals Management Service (MMS) today. They are the principal U.S. federal agency responsible for oil spill response research to fulfill oil spill regulatory responsibilities under the Oil Pollution Act of 1990 (OPA 90). This includes the responsibility to manage the National Oil Spill Response Facility "Ohmsett." For more than 25 years, MMS has maintained a comprehensive, long-term research program to improve oil spill response technologies. The major focus of the program is to improve the knowledge and technologies used for the detection, containment, and cleanup of oil spills that may occur on the OCS. Nor will we be hearing from the U.S. Coast Guard. They are the other agency with responsibility to respond to and manage oil spills.

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EXXON VALDEZ

Apparently, the inspiration for today's hearing is that today is the 20th Anniversary of the Valdez disaster in Alaska. Sadly, while we have learned a lot since this terrible disaster, we haven't learned one of the major lessons. Tankers are a terrible way to deliver oil. America is more dependent now on tanker transported oil then we were 20 years ago. We can free ourselves from this tanker transported oil if we simply choose to develop our domestic resources. We have vast reserves of oil off the California coast; so much that tons of it seep up from the ocean floor each day. We have tremendously rich deposits of oil shale which are calling for investment in research and development, if we can keep a clear set of rules in place for industry.

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The technological leap in the oil and gas industry and the ability to clean up oil spills has advanced just as much. I have heard from company executives that say they aren't in the drilling business; they are in the advanced technology business. This is important to keep in mind.

CLOSING

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Development of oil and gas can be done in harmony with the development of wind and tidal energy, fishing, and tourism. We have heard testimony that all these uses are compatible in the Gulf of Mexico and we should expect no less from our other states.

Americans are worried about our standard of living. Oil prices are beginning to creep up as a result of monopolistic actions by OPEC. We can break free from oil tyrants, but only if we are willing to act and develop our resources.

I thank you and look forward to hearing from our witnesses.

Ms. BORDALLO. I thank the gentleman, and I would now like to recognize our first panel of witnesses.

Mr. Ian A. Bowles, Secretary of Energy and Environmental Affairs for the State of Massachusetts; Professor Joshua G. Eagle, Assistant Professor of Law from the University of South Carolina; Dr. Thomas Kitsos, Consultant to the Joint Ocean Commission; and finally, Mr. Robbie Diamond, President and CEO of Securing America's Energy Future.

I thank you all very much for being here this morning. And I would note that the timing lights on the table will indicate when five minutes have passed, and your time has concluded.

We would appreciate your cooperation in complying with these limits, but be assured that your full written statement will be submitted for the record.

And at this point, I would now like to recognize Secretary Bowles. Thank you very much, Mr. Secretary, for being here with us today, and please begin with your testimony.

STATEMENT OF THE HONORABLE IAN A. BOWLES, SECRETARY, EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS, STATE OF MASSACHUSETTS

Mr. BOWLES. Thank you very much, Madame Chairwoman. Thank you, members of the committee, and my home state Congressman, Chairman Markey, as well for turning out here today. And thanks for the opportunity to testify on energy development on the Outer Continental Shelf.

Oceans represent an important source of energy for the United States, ranging from oil and gas to renewable energy from tide, wave, and wind power, but they are also a critical natural resource. I want to underscore that.

In Massachusetts we are engaged in a unique first-in-the-nation exercise to develop a comprehensive ocean plan for our state waters. And that will include designating sites that are special and sensitive, ecologically sensitive, as well as areas for renewable power development. And we are in the midst of an 18-month process as that goes along.

And as you consider these issues, I encourage you to do a few things. One is to elevate offshore wind as a component of a diverse national energy portfolio, as well as do some readjusting and alignment among the Federal agencies to focus them more tightly on cooperation with states, as we go through processes like the one we are involved with in Massachusetts.

Traditionally, the discussion of offshore energy has centered on oil and gas only, and we in Massachusetts have sounded a cautionary approach to that, in part because of the tremendous economic importance of George's Bank for our economy: $140 million a year in groundfish, $225 million a year in scallops. New Bedford is the number one port in the Nation in terms of economic value of landings, and George's Bank is vitally important from an economic perspective.

Initial exploration of the bank in the eighties found no oil and gas that is commercially exploitable at the time. And from where we sit, oil and gas development of George's Bank, given the other values it provides for our economy, was a bad idea 30 years ago, and we see no reason to believe it is a good idea today.

In contrast, I would offer that offshore wind is a renewable, free—free of harmful emissions, zero-emissions type of source of power generation. Today, 12 countries around the world have a combined total of more than 500 wind turbines in the oceans, some 1.4 gigawatts of power, but none in the United States. We are about 20 years behind Europe on the development of offshore wind. And I will circulate for the members of the committee a map of offshore wind in Europe. It is remarkable the degree of penetration that is coming in Europe in that regard.

As you move forward and look at offshore wind, I would encourage you to continue to focus on the pressing need for the MMS rule on alternative energy development. I commend Secretary Salazar for the focus that they are giving to that.

And I will also make a related point about transmission. A lot of debate today about overland transmission and the importance of delivering power from remote regions.

While that may be a good thing for the West and the Midwest, here on the East Coast, the much larger and superior, in terms of resource size, capacity factor, distribution of liability, and proximity to our population centers is offshore wind. And we need FERC and the MMS to really begin to focus and do the analytics necessary to say what would it take to do a very large set of offshore wind development in this very close and important resource.

If we fail to take the moment in our history where we are focusing now on cap and trade, and on aggressive Federal policies for sustainable energy development, and don't focus on offshore wind, we will be regretting it for decades to come.

Last, just say a few things more about the ocean plan in Massachusetts. Gov. Patrick signed the Oceans Act in 2008. Our Office of Coastal Zone Management, led by Deerin Babb-Brott, who I want to introduce here, and happy to have him follow up with any members of the committees leading this difficult process of developing our management plan.

Let me just say a few of the characteristics quickly and in more detail in my testimony, my written testimony. But it will be a science-based process. The planning process is transparent and participatory. We have had 18-month process and numerous workshops and public hearings.

We are seeking to coordinate state and Federal regulatory activities in our state waters, but also looking at our adjacent Federal

waters. We plan to revise it every five years. And perhaps most importantly, we are going to give clarity.

For those who are seeking development of renewable power, and those who are concerned about protecting special and sensitive areas, we intend to make choices and give clarity at the end of our plan.

And we also see it as a robust template for protection of our natural resources, an important area of engagement with the Federal government. Just a note on that, to say that as we have worked with NOAA and the other Federal agencies, we have about five or six different silos that we talk to about our plan. There is not a one single place of coordination.

And so I think the idea of having NOAA embrace more of the coastal mission I think is an important thing that you all could clarify by legislation.

I thank you for your time and attention, and will be glad to take questions.

[The prepared statement of Mr. Bowles follows:]

Statement of Ian Bowles, Secretary, Executive Office of Energy and Environmental Affairs, Commonwealth of Massachusetts

Introduction

Good morning, Mr. Chairman, Madam Chairwoman and Members of the Subcommittees. My name is Ian Bowles and I am Secretary of the Executive Office of Energy and Environmental Affairs for the Commonwealth of Massachusetts. In creating the first state cabinet-level office in the nation that oversees both energy and environmental agencies, Governor Patrick recognized, as you have, that these areas of responsibility present challenges and opportunities that are inseparable and must be addressed together. Thank you for holding this important hearing and for inviting me to testify on energy development in the Outer Continental Shelf.

Coastal and ocean areas represent an important source of energy for the U.S., ranging from oil and gas to renewable energy from tide, wave and wind. However, energy is but one product of the ocean's bounty, and its use as a resource must be balanced by a commitment to protection of living marine resources, seafloor habitats, traditional uses such as fishing and navigation, and coastal communities. Our oceans are held in public trust for all citizens, and must be managed in a way that is consistent with the long-term preservation of these resources.

In Massachusetts, the Oceans Act passed by the state Legislature and signed by Governor Patrick last year directed my office to develop a comprehensive management plan for our state waters that will be the first such plan in the nation. We are now creating an ocean management framework that will allow us to responsibly develop our marine renewable resources, and wind in particular, in the context of strong environmental protection and respect for the many interests that share our coastal waters. Based on the work we've done thus far, I believe the following elements are critical to an effective, progressive national energy policy: 1) elevate the energy policy priority of offshore wind as a component of a diverse national energy portfolio; 2) coordinate and focus federal agency support for ocean management based on effective partnerships between state and federal agencies; 3) ensure a strong supportive role for the National Oceanic and Atmospheric Administration and enhance the existing federal-state partnership in a reauthorized Coastal Zone Management Act; and 4) establish an Ocean and Coastal Trust Fund to support coastal states' efforts to address the critical ocean and coastal management needs of our nation.

Offshore energy, old and new

Traditionally, discussion of offshore energy development has centered on oil and natural gas exploration and extraction. In that context Massachusetts has always sounded a note of caution, for we have much at stake. The waters of the Outer Continental Shelf off Massachusetts are dominated by Georges Bank, a uniquely productive fishery. Georges Bank is a rich natural resource and a vital part of the Massachusetts and New England economy that warrants strong protections.

The groundfish fishery of Georges Bank is regarded as one of the most commercially important fisheries on the Atlantic coast and the lifeblood of many coastal communities. The history of fishing on the Bank extends over 400 years.

The value of Georges Bank groundfish today exceeds $140 million annually, and with careful stewardship could grow to $300 million by 2026. About $70 million is attributable to the Massachusetts economy, with the remaining $70 million supporting other coastal New England States and Canadian Provinces. The scallop fishery generates another $225 million in economic activity annually, nearly all of which benefits Massachusetts. Thanks to Georges Bank scallop revenues, New Bedford has been the nation's most highly valued fishing port for the past six years. Gloucester continues to rank among the top ten.

Still, this significant and productive fishery is under great stress, experiencing a general decline in landings and biomass of Atlantic cod, haddock and yellowtail flounder over the past 20 years. Any further damage to the fishery would be devastating to the fishing industry in Massachusetts and New England, which has already seen enormous cutbacks resulting from federal catch limitations intended to rebuild the fishery. With effective fisheries management and environmental stewardship, we are optimistic about the recovery of the Georges Bank fishery. Haddock populations are already recovering, and the scallop fishery remains a thriving and highly valuable fishery.

The fragility of this irreplaceable natural resource would make us in Massachusetts leery of calls to reopen these waters to oil and gas exploration even if the prospects seemed more promising. But initial exploration of Georges Bank in the 1980s found no oil and no commercially exploitable natural gas. Even if the technology and/or economics have changed since, the great value of Georges Bank as a fishery would set an extremely high bar for a competing use like oil or gas drilling that could put it at risk. Drilling in Georges Bank proved to be a bad idea 30 years ago, and we have no reason to think it would be a good idea today.

But oil and gas are no longer the only energy resources to be found on the Outer Continental Shelf, and worthy of our attention. Today in New England, offshore wind energy offers the prospect of utility-scale electricity that is renewable, free of harmful emissions, and if developed with care and forethought, compatible with other ocean uses and resources. The United States Department of Energy estimates that 900,000 megawatts (MW) of offshore wind energy potential is available off the coasts of the United States, including those of the Great Lakes. It is a potentially inexhaustible resource that in many cases is available in close proximity to regions with the highest electricity demand, minimizing the need for costly new transmission lines. According to the National Renewable Energy Laboratory (NREL), households and businesses in the 28 coastal states use 78% of the electricity generated in the United States.

The vast resource of offshore wind remains untapped in the United States, but capturing it is no longer a fanciful notion. We have come a long way since 2001, when Cape Wind Associates proposed to construct this nation's first offshore wind farm off the coast of Cape Cod. Offshore wind energy was untested in the U.S. at that time, even though the first offshore wind project was installed almost 20 years ago in Denmark. Today twelve countries have a combined total of more than 500 turbines (1,480 MW) in the water. The United States is still awaiting its first operational offshore wind farm, but Cape Wind is no longer the only project in the queue. In fact, the wind energy potential of every coastal region of the United States (including the Great Lakes) has been or is in the process of being assessed. Projects have been proposed in every region save the west coast, where conditions offer no opportunities for shallow water development.

In addition, preliminary estimates by the U.S. Department of Energy indicate that ocean wind resources just beyond the reach of current technology offer even bigger bang for the buck. University researchers and private developers are already working on overcoming the engineering barriers presented by deep-water environments over the horizon. Their success could help propel the U.S. to the forefront of the emerging global offshore wind energy industry.

With interest growing steadily, there is a pressing need for clear and consistent rules from the Department of the Interior's Minerals Management Service governing the siting and leasing of offshore wind facilities. Governor Patrick and I applaud the Obama Administration and Interior Secretary Salazar for their clear expressions of support for strong and effective ocean and energy policy. The administration could immediately and significantly demonstrate its support for renewable energy development by releasing the final rule for alternative energy development on the Outer Continental Shelf. The lack of formal guidance is restricting the research and development, planning, and market creation that will draw capital into this promising new industry. The draft rule pending before Secretary Salazar is far from perfect,

and comments filed by Massachusetts identified a variety of shortcomings, but this is a case where the perfect should not stand in the way of the good. Offshore wind is a tremendous resource of renewable, emissions-free energy, and the time has come for us to put it to work creating a clean energy future for the nation.

As we move forward to address the significant opportunity of offshore wind and the siting and leasing framework for it, we should also consider questions of a specific approach to transmission infrastructure. There is currently a significant push for over-land transmission to support the development of wind power in remote regions. This effort would rely on current, fully commercialized and competitive wind and transmission infrastructure, and some of this transmission may be appropriate to move this wind power to load centers in the West and Midwest. The East Coast is a different matter. Here, offshore wind is superior to remote onshore wind in terms of resource size, distribution, capacity factor, reliability, minimization of environmental impact, and—this is the key—proximity to population centers. This enormous energy resource is located just a short distance from the major load centers of the East Coast, but unlike on-land wind, tapping it will require development and policy assistance to get it over the commercialization hurdle. We will fail as a nation if we do not take this moment in our history—a time of aggressive federal funding and policymaking for sustainable energy development—to capture this resource once and for all for the benefit of current and future generations.

What is required to make this happen? Conceptually, the answer is fairly simple. We need a comprehensive plan to develop an offshore transmission backbone along the East Coast to facilitate the interconnection of any and all wind and tidal energy resources. Such a system would enable interconnection of offshore generating capacity at multiple points, and would deliver power into the major load centers along the coast, from Portland, Maine, to Virginia Beach. This would combine renewable resource development with energy, capacity, and transmission congestion relief for the major load centers of the most populous region of our country. Development of such an offshore transmission network will require intense focus from MMS and FERC, and needs to be aggressively pursued as part of any OCS energy resource development plan.

Massachusetts Ocean Management Plan

Our ocean and coastal areas are being called upon to support a tremendous and often conflicting array of critically important activities, including fisheries and aquaculture development and enhancement; commerce and industrial port development; energy and minerals exploration and production; waterfront commerce and residences, public access, recreation and tourism; and habitat preservation and restoration.

Historically, Massachusetts waters have supported traditional uses, and more recently we have permitted such activities as offshore liquefied natural gas facilities, fiber optic and electrical cables, and aquaculture. With wind, wave, and tidal energy emerging as vital resources for meeting energy and environmental challenges, the need to balance and accommodate a growing range of uses while protecting precious natural assets has become more pressing than ever.

Given that the ocean is a resource held in public trust, how should the Commonwealth effectively manage the "assets of the trust" to best protect and use them for the benefit of citizens today and in the future? Which uses should be allowed in which areas? Who should decide? How do we ensure that individual and collective uses do not harm the environment? Do we have the right information to make those decisions? Do public agencies that are authorized to make these decisions have the right tools? How can we work collaboratively with our federal partners to address transboundary resources, uses and impacts?

Massachusetts is striving to answer these questions by establishing a new model of stewardship for the marine ecosystem—a model that recognizes the importance of both protecting and making wise use of the marine environment for the benefit of society now and in the future. I would like to use some of my time this morning to highlight key features of the ocean management plan we are now in the process of developing.

In recognition of our need to better understand, protect and manage the use of our ocean resources, Governor Patrick signed the Massachusetts Oceans Act of 2008 into law last May. The Oceans Act directs my office to develop a draft integrated ocean management plan by June 30, 2009, and promulgate a final plan by December 31, 2009. The Act is comprehensive, and requires, in summary, that the ocean plan:

1. set forth the Commonwealth's goals, siting priorities and standards for ensuring effective stewardship of its ocean waters held in trust for the benefit of the public;

2. adhere to sound management practices, taking into account the existing natural, social, cultural, historic and economic characteristics of the planning areas;
3. preserve and protect the public trust;
4. reflect the importance of the waters of the Commonwealth to its citizens who derive livelihoods and recreational benefits from fishing;
5. value biodiversity and ecosystem health;
6. identify and protect special, sensitive or unique estuarine and marine life and habitats;
7. address climate change and sea-level rise;
8. respect the interdependence of ecosystems;
9. coordinate uses that include international, federal, state and local jurisdictions;
10. foster sustainable uses that capitalize on economic opportunity without significant detriment to the ecology or natural beauty of the ocean;
11. preserve and enhance public access;
12. support the infrastructure necessary to sustain the economy and quality of life for the citizens of the commonwealth;
13. encourage public participation in decision-making;
14. adapt to evolving knowledge and understanding of the ocean environment; and
15. identify appropriate locations and performance standards for activities, uses and facilities allowed under the Ocean Sanctuaries Act, including but not limited to renewable energy facilities, aquaculture, sand mining for beach nourishment, cables, and pipelines.

To do this, my Office of Coastal Zone Management is developing the ocean plan based on the following principles:

The ocean plan will be science based. We have convened workgroups of state and federal agency staff and outside experts to compile and analyze existing data relating to fisheries, habitat, sediment, cultural/recreational/historic resources, renewable energy, and marine infrastructure, and we have convened a science advisory council of credentialed scientists to assist in the development and review of these materials.

The planning process will be transparent and participatory. Since September, we have held 18 public hearings and five public workshops to get input from and share information with the constituencies who will be affected by the ocean plan. We have met with over 80 stakeholder groups representing all sectors of marine interest to gather information and learn the issues important to each group. And we have convened an ocean advisory commission, representing legislators, coastal regional planning agencies, fishing, and environmental and renewable energy interests to provide policy guidance and review planning materials.

The ocean plan will integrate spatial and regulatory management measures. We are employing marine spatial planning and ecosystem-based management techniques to overlay and analyze data from the workgroups to identify special, sensitive and unique marine life and habitat, and to identify appropriate locations for renewable energy facilities and other uses. We are concurrently developing performance standards to define the terms for the respective protection and use of these areas.

The ocean plan will coordinate state and federal regulation of activities in state waters and with current and future uses of federal waters. We are working with our federal partners to identify management areas in state waters that are consistent with federal management interests, to ensure regulatory efficiency. And we will be working with the Minerals Management Service, and others, building on our state planning materials, to identify appropriate locations for the development of renewable energy facilities on the Outer Continental Shelf.

The ocean plan will be revised at least every five years. We recognize that much more data and information are needed to address all of the issues identified through the planning process. An important element of the first plan is the outline for ongoing work and the identification of priority management objectives and associated data needs to ensure ongoing, dynamic evolution of the ocean plan.

The ocean plan will make choices and give clarity to users and development interests. While we build a durable framework for long term, science-based, oceans management, we recognize the need for clarity for the range of interests that seek the opportunity to, for example, site energy infrastructure in our state waters.

Overall, the ocean plan will provide a robust template to protect our vital natural resources and balance traditional uses with new ones, such as renewable energy, that are important to our future.

Federal leadership on ocean policy

More than five years ago, the U.S. Commission on Ocean Policy and the Pew Ocean Commission declared that, while coastal and ocean issues have significant and far-reaching environmental, economic and social ramifications for the nation, federal policy-makers have been slow and short-sighted in their response. More recently, the Joint Ocean Commission Initiative's Ocean Policy Report Card gave state-level planning and management efforts an "A-"; federal efforts did not fare as well, with federal shortcomings also implicated in hampering state efforts: "While the problems facing marine ecosystems must be addressed at the local level, additional tools and support that the federal government can provide are also needed to truly resolve the most pressing issues."

The Coastal Zone Management Act (CZMA) of 1972 authorized the framework for the wise stewardship of the nation's coastal resources. CZMA established a unique partnership among federal, state, and local governments to ensure balanced consideration of competing coastal resource uses. CZMA encourages coastal states to develop coastal management plans, subject to review and approval by the federal government. In addition to its oversight function, the federal role in the partnership consists of a combination of financial assistance to states and the assurance of consistency of federal activities with approved state management plans.

To date, the partnership established by CZMA has been remarkably productive. More than 99 percent of national coastal areas now fall under a state coastal zone management plan; 34 of 35 eligible coastal states and territories have instituted these plans. Because of their experience in managing these programs, coastal states and territories have developed unique expertise in dealing with coastal zone management issues. This expertise will become increasingly important as pressures on the nation's finite coastal resources continue to increase.

A reauthorized CZMA should also contain provisions that authorize grants to coastal states to support state efforts and federal partnerships to initiate and complete surveys of state waters and adjacent federal waters. Intelligent and responsible siting of energy facilities—both traditional and renewable—will require that significant effort be devoted to identifying the most appropriate locations for these facilities. Adequate and current information is needed to identify and understand critical components such as living marine resources like fish, marine mammals and endangered species; physical and chemical conditions like bathymetry, seafloor geology, and salinity; and ocean uses like fishing, navigation, and recreation.

Section 307 of the Coastal Zone Management Act, known as the federal consistency provision, grants states authority to review federal activities, licenses and permits that have reasonably foreseeable effects on any land or water use or natural resource of the coastal zone. These activities must be consistent to the maximum extent practicable with the enforceable policies of a coastal state's federally approved coastal management program. This has been a primary method of ensuring more sustainable development of the nation's coasts.

Consistency applies before a federal permit is issued; thus, it facilitates early consultation between states, federal agencies and permit applicants in order to avert disputes from arising after substantial commitments have been made by agencies and applicants. Without these early reviews, there would be much more uncertainty, litigation and calls for federal legislative intervention in actions in coastal communities. To increase efficiency for states, federal agencies and applicants, many states have created streamlined approaches to energy related activities.

In granting states consistency authority, Congress recognized that federal interests and activities must be balanced with the sovereign interests of states in managing coastal resources. This is the underlying philosophy of the CZMA and the consistency provision. State coastal programs must receive federal approval for a state to exercise its consistency authority; likewise, each enforceable policy upon which it relies must also receive federal approval.

Furthermore, the resources of the OCS and the coastal zone are many times difficult, if not impossible, to differentiate. Fish, currents, wind and wave care little about an imaginary line drawn three nautical miles from our shores. As the committee considers offshore energy, the retention of consistency under the CZMA must be a priority.

To support the application of this expertise and augment financial resources available to state coastal and ocean managers, the U.S. Commission on Ocean Policy recommended that a portion of OCS revenues should be shared with coastal states (Recommendation 24-1). Revenues shared with the states should further the goals of improved coastal and ocean management. The establishment of a Trust Fund provides a mechanism for the reinvestment of revenues generated from these public lands toward protection of coastal resources and communities. The Trust Fund can support the focused efforts of coastal states, territories and commonwealths, other

appropriate coastal authorities, and federal agencies in addressing critical ocean and coastal management needs of our nation including restoration, protection, and enhancement of natural processes and habitats. This will help minimize and plan for the impacts of sea level rise, climate change, and ocean acidification on ocean and coastal resources.

In 2006, the Coastal States Organization—which represents the interests of the 35 coastal states, Commonwealths, and Territories on federal legislative, administrative, and policy issues relating to sound coastal, Great Lakes, and ocean management—adopted a policy on revenue sharing. The policy holds that "because the coastal states face a number of challenges in conserving their coastal resources and protecting their coastal communities, OCS receipts should be used to further the goals of coastal and ocean restoration, conservation, preservation, mitigation, research, and education." Furthermore, these funds should be provided over and above existing appropriations to meet the increasingly complex and unmet needs of ocean and coastal managers.

As federal agencies move forward with the implementation of a new energy policy, it is imperative that they do so in close and active partnerships with state governments and the private sector. States like Massachusetts are actively engaged in near and offshore ocean planning and the identification of appropriate locations for the development of renewable energy facilities both in state waters and on the Outer Continental Shelf. They need regular and consistent support from and coordination with their federal agency counterparts. NOAA has done very well in this aspect, and we would strongly recommend that MMS follow suit with an increased regional and even state presence and dialogue.

Conclusion

The wise use and management of our ocean resources is essential to protecting the marine ecosystem for current and future generations, meeting the nation's energy needs, feeding and ensuring the health of its citizens, and responding effectively to the impacts of climate change. In legislation related to state and federal coastal and ocean management, Massachusetts recommends that Congress:

1. Elevate the energy policy priority of offshore wind. Europe has moved well ahead of the United States on the development of offshore wind resources. Offshore wind is superior to onshore wind in terms of capacity factor, reliability and proximity to the major load centers of the East Coast. Once the OCS rule is completed, MMS and FERC should turn their focus toward resolving the technical issues surrounding an offshore wind transmission system and DOE should invest in accelerating the commercialization of deeper water wind technologies.
2. Clarify the National Oceanic and Atmospheric Administration's mission in supporting new approaches to ocean and coastal management. NOAA is a vital resource for our states, providing data, coastal management expertise in all disciplines, and financial resources in support of state coastal interests. Given the extent of NOAA's line agencies' jurisdiction, their constructive participation in and support for new approaches to ocean management will be critical as we increase the scope of our ocean activities. Legislation should ensure that NOAA's structure is consistent with the principles of ecosystem-based management and with its primary functions of assessment, prediction, and operations; management; and research and education.
3. Reauthorize CZMA to enhance the federal-state partnership on managing state and federal waters. The Coastal Zone Management Act is a critical tool by which both federal and state governments effectively manage the multiplicity of uses and resources in state waters. To aid the states in their efforts to develop workable coastal zone management plans, it is critical that the federal government continue to support and enhance a national partnership framework.
4. Establish an Ocean and Coastal Trust Fund. Funded by a portion of Outer Continental Shelf revenues, the Trust Fund would support the focused efforts of coastal states, territories and commonwealths, other appropriate coastal authorities, and federal agencies in addressing critical ocean and coastal management needs of our nation, including restoration, protection, and enhancement of natural processes and habitats. This will provide resources to help minimize and plan for the impacts of sea level rise, climate change, and ocean acidification on ocean and coastal resources.

In closing, this is a time of great challenge but also great opportunity when it comes to the vast resources found in our ocean waters. We in Massachusetts are particularly hopeful about the prospect of offshore wind helping to meet our energy and climate goals and obligations, and excited about the process of bringing a com-

prehensive approach to managing our ocean resources in a productive and environmentally responsible way. We look forward to the federal government being vital partner in both.

Thank you for holding this important hearing and for the opportunity to address the joint subcommittees.

Response to questions submitted for the record by Hon.Ian A. Bowles

Questions from Majority Members on the Subcommittees

1. Secretary Bowles, Dr. Kitsos, and Professor Eagle, the three of you made a strong case for the benefits of a comprehensive planning process for our oceans. However, are there objections that would be raised to the idea of marine spatial planning or ocean planning, and if so, what are they and how do you respond to them?

1. Objection: Uses such as commercial fishing and recreation with a strong sense of tradition may perceive such an effort as threatening, since through such an effort emerging uses (related to renewable energy, e.g.) would be part of the consideration. Response: Successful comprehensive ocean planning allows all interests to have a voice before an individual project is proposed. Because commercial fishing, recreation, and other uses provide input (i.e., identifying highly important fishing grounds or travel routes) regarding their concerns, ocean planning thus reduces conflict and controversy associated with specific ocean development proposals.
2. Objection: Planning slows down the pace of development. Response: Done correctly (i.e. with a fully developed program for public participation), the end result of ocean planning is that obstacles for appropriate development are avoided or minimized. Stakeholder concerns and policy issues can be dealt with through the development of the plan, so that a specific development that conforms to the plan will have fewer issues to address. Additionally, an aggressive deadline for the plan (for example, such as that mandated in the Massachusetts Oceans Act) can be helpful regarding this objection.
3. Objection: There is insufficient scientific information available. Response: There is certainly much that we do not know about the ocean environment, particularly toward the outer edges of the OCS. However, the Massachusetts experience is that the combination of existing scientific data and the input of lifelong users of ocean waters (fishermen, commercial vessel operators, and others) provide a solid foundation of information to begin making decisions on the appropriate locations of specific uses.
4. Objection: Ocean planning is not necessary, since existing authorities at the federal level are sufficient to address any conflicts that arise. Response: A main need for ocean planning is because of the intersection of public policy concerns such as climate change, the need for clean, secure electricity generation, and the importance of commercial fishing. While federal authorities exist to address each of these policy concerns, the tendency is for there to be an issue-specific approach: one agency regulates energy development; one agency regulates commercial fishing, etc. Comprehensive ocean planning provides for a mechanism to consider all such concerns simultaneously.

2. Secretary Bowles, you mention in your testimony that you believe the MMS draft rules for offshore wind are "far from perfect." In what areas, specifically, do you see flaws? Also, during the hearing you indicated that you did not believe that the regimented MMS oil & gas leasing system would be appropriate for offshore renewables. Could you elaborate on this point, and describe what parts of the oil & gas program are too regimented and why those procedures would not be appropriate for renewables?

Oil and gas leasing has multiple layers of NEPA review/lease step; in part this is because of the lack of any planning activity that happens before the oil and gas leasing process is triggered (when a proponent shows interest in a particular area) and partly because of the significant potential environmental impact (due to oil spills etc.) during oil and gas extraction operations. Renewable energy facilities, if appropriately sited to avoid significant impacts (particularly related to birds and bats), may not have the equivalent level of potential impact and thus may not require as extensive a review process. Additionally, an ocean plan that considered renewable energy would, through its development, seek to minimize environmental impact and conflict with existing uses; presumably, therefore, the scope of NEPA review would also be decreased. Our comments to MMS in response to the draft rule

observed that the proposed information requirements did not reflect an appropriate distinction between the functional characteristics and concomitant review process for oil and gas and renewable energy technologies.

3. Secretary Bowles, would you support a comprehensive federal planning process that did not presuppose that certain areas, such as Georges Bank, would be taken off-limits for oil and gas exploration? That is, if we moved forward with a planning process, would Massachusetts insist on specific protections for Georges Bank beforehand, or would you trust that the planning process would result in that area being protected when all is said and done?

The Massachusetts Oceans plan would exclude any type of ocean use, including renewable energy or oil & gas exploration, in areas of significant commercial fishing effort and value. If the federal planning process used similar criteria for the Outer Continental Shelf, which we believe is vital, Georges Bank would be excluded from oil & gas exploration. That is because Georges Bank is regarded as one of the most commercially important groundfish fisheries on the Atlantic coast, with value exceeding $140 million annually, while the scallop fishery generates another $225 million in economic activity annually. Thanks to Georges Bank scallop revenues, New Bedford has been the nation's most highly valued fishing port for the past six years.

4. Secretary Bowles, when you talk about an offshore transmission backbone, are you referring to an actual transmission line that is sited offshore, perhaps in a pipeline, or are you referring to an onshore transmission line that is dedicated to offshore-generated electricity?

The term "offshore transmission backbone" refers to the need to develop transmission infrastructure and capacity in order to bring electricity generated by offshore wind turbines to load centers, which would include offshore transmission, limited onshore transmission, and onshore infrastructure where the transmission interconnects with existing power system infrastructure (e.g., at transmission substations). Such a system would enable interconnection of offshore generating capacity at multiple points, and would deliver power into the major load centers along the coast. Until there is a specific effort to identify the best locations for offshore wind generation, it is difficult to say whether this would involve a single extended offshore line, or possible multiple shorter segments. Either way, a concerted effort to act on this vision would combine renewable resource development with energy, capacity, and transmission congestion relief for the major load centers of the most populous region of our country. Development of such an offshore transmission network will require intense focus from MMS and FERC, and needs to be aggressively pursued as part of any OCS energy resource development plan.

5. Secretary Bowles, Dr. Kitsos, and Professor Eagle, about three years ago, MMS delineated administrative lines in the Outer Continental Shelf, effectively assigning different parts of the ocean to different states, although making it clear that all of the waters of the OCS are federal. MMS published these lines in the Federal Register in January 2006 without any public comment period or, as far as we have been able to tell, any consultation with states. Although MMS has indicated that these lines are for purely administrative purposes, we have seen a real-world consequence of these lines when they were used to establish the portion of the OCS offshore Virginia that would be included in the 2007-2012 5-year plan. What are the other potential consequences of these administrative boundaries that Congress should be aware of, and do you believe there is a need for MMS to revisit how these lines were determined?

From the Federal Register notice for the delineation of administrative lines, MMS stated that their goals were:

1. Enhancing the Secretary's ability to ensure that the "4-C's"—communication, consultation and cooperation, all in support of conservation{are considered as [the Director] engages in efforts to identify which State has the most interest in the extended area offshore from its coastline because of the increasing number of commercial activities on the Federal OCS, such as permits for liquefied natural gas facilities, wind power, and wave energy;
2. Providing the basis for more accurate delineation of OCS planning areas;
3. Assisting in "affected State" status under the Coastal Zone Management Act and the OCS Lands Act. For example, section 18 of the OCS Lands Act requires the Secretary to consider the "laws, goals, and policies of affected States." Similarly, section 19 analysis requires the Secretary to balance national interests with the "well-being of the citizens of the affected State";

4. Providing a more accurate basis for the Secretary to consider support for, or objections to, a State's request to analyze leasing off its shores. Without such administrative lines, it is difficult to define these areas accurately;
5. Assisting in the section 18 comparative analysis to determine "an equitable sharing of developmental benefits and environmental risks among regions." Such lines will more accurately define the necessary assumptions of what are "regions"; and
6. Helping define appropriate consultation and information sharing with States.

These are important consequences of their action which, in the MMS language above, clearly have important ramifications. Deciding what States are involved, the nature of that involvement, and what is "appropriate consultation and information sharing" with States during regulatory reviews has clear policy and legal implications. This is particularly important given the geography of the Atlantic coast of the United States and the potential for impacts in one state's administrative area to affect another state. The CZMA provides that a State can assert federal consistency authority for activities which can be demonstrated to affect coastal resources; such activities may have an effect on coastal resources of multiple states.

Questions from Minority Members on the Subcommittee

1. While oil and gas exploration and development may not be appropriate off the coast of Massachusetts, do you oppose the development of oil and gas in other areas of the OCS as long as it is done in a way that would "balance and accommodate a range of uses while protecting natural assets?"

No, not as long as the following principles are achieved:
1. Minimize conflicts with established uses and/or where the oil and gas industry is an established presence, such that such conflicts have already been dealt with;
2. Ensure that adjacent/affected state interests and policies are incorporated (see response to question 5 above)
3. Ensure that new and emerging uses are included in the process of balancing and accommodating.

2. In your testimony, you state that Massachusetts is "employing marine spatial planning and ecosystem-based management techniques to overlay and analyze data from workgroups to identify special, sensitive and unique marine life habitat, and to identify appropriate locations for renewable energy facilities and other uses." You say the State has held 18 public hearings and five public workshops to get information to develop its integrated ocean management plan.

a. Has the State surveyed its offshore waters to create a database of what resources are out there and available for use or protection?

Yes, and data and information has been collected from and with the assistance of:
- state agencies,
- Federal agencies (NOAA, USGS, U.S. Coast Guard, U.S. EPA, U.S. FWS, U.S. Army Corps of Engineers)
- Academic institutions (UMass, MIT, Boston University, WHOI and MIT Sea Grant)
- Not-for-profit organizations (MMTA, Audubon of MA, PCCS, New England Whale Center, New England Aquarium,
- Industry (entities and organizations representing renewable energy—wind and tidal, commercial fishing, recreational fishing, recreational boating, shipping, passenger transportation)

b. What specific science is the State using to develop this integrated ocean management plan?

Two main elements:
1. Incorporating best available socio-economic science into the ocean management plan. This includes:
   a Analysis of commercial fisheries landings and value to determine economic benefit derived from commercial fishing on a specific area-basis (avoid impacts to areas of high commercial fishing importance)
   b. Evaluation of patterns of recreational boating and recreational fishing (avoid impacts to areas of concentrated recreational use)
   c. Recognition of existing patterns of commercial shipping activity such as the approaches to Boston (avoid impacts to established navigation routes)

d. Evaluation of potential renewable energy technology given Massachusetts renewable energy resources (wind, tidal/current speed) and potential limitations on siting (depth, bottom type/depth to bedrock)
e. Employing best available information (based on experience in Massachusetts and elsewhere) regarding the potential for conflicts between uses and resources, as well as between different uses, and measures to address or reduce those conflicts.

2. Incorporating best available environmental and ecological information. This includes:
   a. Fish, marine mammal, and bird data (spatial presence and concentration), and understanding of the biology of individual species (for example, the foraging requirements of whales)
   b. High resolution mapping of the ocean seafloor
   c. Developing an approach to measuring the relative ecological value of areas of the Massachusetts ocean, by looking at a combination of biological and ecological factors.
   d. Assessing the potential impacts of specific potential uses (renewable energy, aquaculture, pipelines, cables) on species and habitats.

c. Has the State found any gaps in the existing scientific data relating to fisheries, habitat, sediment, cultural/recreational/historic/ resources, renewable energy, and marine infrastructure that would need to be collected or updated before the plan could be implemented?

The plan will identify appropriate areas for uses such as wind energy development using the information that is at hand today. The approach for this plan is to designate only limited areas of the planning area for such uses—only those areas where, with some certainty, impacts will be minimized (due to the absence of sensitive species, lack of potential conflict with existing uses such as commercial fishing, etc.). As part of development of this plan, a set of future research questions is being developed to enable the plan to evolve in the future—for example, to adapt as new technologies are developed and as new scientific information is acquired.

d. Do you consider this process to develop the integrated ocean management plan to be a "comprehensive, science-based, precautionary approach?"

Yes, in part for the reasons stated above under part c, but also:

- Comprehensive because we are acquiring as much information as possible, and addressing the issues that such information leads us to;
- Science-based because it incorporates the best available science, and the structure of the plan is purposefully logical, and responsive to available information in an objective fashion; and
- Precautionary because an important question we are continually asking ourselves is: "Does the information at hand support the decision we are about to make?" As a result, we are identifying relatively small areas as appropriate for particular uses.

3. You mention that the State is "developing performance standards to define the terms for respective protection and use of offshore areas."

a. Has the State collected any baseline data for its offshore waters? Yes; see response to question 2 above.
b. Does the State plan to collect this information? See response to question 2 above.
c. Did the State collect any baseline information before permitting the offshore liquified natural gas facilities or the aquaculture facilities?

Some information had been collected; for example, there was some information available regarding bottom type (bedrock vs. mud/sand) and presence of marine mammals, fish, and other species. Much information was collected as part of the permitting process for the liquefied natural gas facilities.

4. You refer to the creation of an Ocean Trust fund, which would be funded by a portion of OCS revenues. Is the State of Massachusetts charging resource rental fees for the offshore liquefied natural gas facilities or the aquaculture facilities? If so, what is the fee amount? How did the State determine the fee rate? What are the fees used for, conservation measures?

Massachusetts tidelands law (so-called "Chapter 91") requires fees for occupation and displacement for projects in state waters. The pipeline component of the projects in state waters is subject to an occupation fee of $1.00 per square yard of

area of occupied land held by the Commonwealth, times the length of the license term, in years. This fee, fixed for the term of the license, is assessed on a lump sum basis, and is deposited in the general fund. The occupation fee was approximately $500,000 for each of the two offshore liquefied natural gas facilities.

Additional compensatory mitigation was assessed for impacts to natural resources (marine mammals, fish and habitat) and existing water dependent uses (commercial and recreational fishing, marine businesses (whale watching, charter fishing boats), and general recreation) Mitigation totaled $23.5million per project, calculated using best professional judgment of scale of impact, affected entity, and appropriate mitigation measures (see Secretary's Certificate, http://www.mass.gov/envir/mepa/pdffiles/certificates/120106/13473feir.pdf, at pp 4-9, for specific allocation of mitigation funds.

Ms. BORDALLO. Thank you very much, Mr. Secretary, for your statement, and for providing those insights into the efforts of the State of Massachusetts to thoughtfully plan for the different uses of our oceans.

Professor Eagle, you are now recognized to testify for five minutes.

STATEMENT OF JOSHUA G. EAGLE, ASSISTANT PROFESSOR OF LAW, UNIVERSITY OF SOUTH CAROLINA SCHOOL OF LAW

Mr. EAGLE. Thank you, Madame Chairwoman, Mr. Chairman, and members of both Subcommittees. Thank you for the opportunity to appear here today.

You have asked me to discuss the potential benefits of marine spatial planning as it relates to the development of offshore energy projects. The term "marine spatial planning" refers to a process that governments can use to allocate limited ocean resources to various defined uses, such as oil and gas development, wind farms, recreational fishing, commercial fishing, and marine conservation.

The benefits of spatial allocation are that it allows incompatible uses to be physically separated, and synergistic uses to be co-located. The process ultimately produces a two- or three-dimensional map on which ocean areas would be designated for particular uses.

Marine spatial planning is often linked to the concept of ocean zoning. That term refers to the laws and regulations that would govern the use of each area established through the planning process. These laws or regulations would, among other things, specify the types of resource uses allowed or not allowed in given zones, as well as standards and procedures for permitting allowable uses within those zones.

There are three reasons why marine planning and zoning is a good idea. First, the planning process itself. Second, the potential reduction of user-group conflicts. And third, the fact that it would provide valuable certainty and security to those resource user groups.

The value of planning is particularly high in the context of marine resource development, because marine resources are public resources that government holds in trust for its citizens. The government's trustee responsibility for those resources mandates that it makes fully informed, rational decisions. Such decisions can only be made after thorough scientific and economic assessment of the resources.

This kind of assessment is at the core of any comprehensive planning effort. The alternative to planning—that is, ad hoc per-

mitting within a multiple-use system—leads only to information regarding the project for which a permit is being sought. A decision made on the basis of project-specific information is likely not to be optimal, mainly because it will not take into account a broad range of alternatives to the proposed action.

As beneficiaries of the ocean trust, citizens should be provided with the most democratic, transparent means of input into government decisions on resource use. Because it would take into consideration all potential uses of ocean resources, and because it is based on scientific and economic information, a comprehensive planning process would create ideal conditions for quality public input.

Zoning and planning can also preempt conflicts among competing public user groups. There are, in fact, a wide range of competing uses for limited marine resources and ocean space. In many cases, proposed uses of particular areas will directly conflict. The same square mile of ocean space cannot, for example, be used for both seabed mining and marine conservation.

In other cases, two proposed uses could conflict by virtue of the fact that they were cited in close proximity. Nearby mining activities may, for example, lessen the effectiveness of a conservation-oriented, marine protected area.

Marine planning and zoning allows for some areas of the ocean to be dedicated to uses that are not compatible with any other uses. At the same time, planning and zoning provides a mechanism whereby competing conflicting uses may be located geographically far enough apart so that they do not impose negative externalities on one another.

Planning and zoning creates the opportunity not only to separate incompatible uses, but to locate zones so as to maximize synergies.

Next, planning and zoning enhances security and certainty for user groups. As noted above, the alternative to comprehensive marine planning and zoning is ad hoc permitting. In addition to requiring an extensive and expensive public process for each new proposed project, an ad hoc approach creates a great deal of uncertainty.

Certainty is particularly important in the marine context and in the context of resource development. Many desired uses of marine resources, including fishing, oil and gas development, require substantial capital investment. Each new oil platform, for example, costs billions of dollars to construct and install.

The end result of a comprehensive planning process would be that certain ocean areas would be presumptively dedicated to specific uses. Such presumptions, which would be set out in the laws governing permit processing, would create a great deal more certainty than the laws mandating ad hoc approvals that we currently have.

Certainty could be increased even further if both Federal and state waters were included in a planning process.

Finally, some have suggested that planning and zoning are likely to be expensive, and will slow development. I do not think this is the case.

It is true planning and zoning would require a several-year study period, during which time the planning body, likely a Congression-

ally chartered commission, would gather information, conduct hearings, consult with experts, and develop a plan.

However, once Congress considered and adopted the plan and the implementing legislation, costs and delays associated with project development should be far less than they would be under an ad hoc system.

Thank you very much, and I am happy to take your questions.

[The prepared statement of Mr. Eagle follows:]

Statement of Joshua G. Eagle, Assistant Professor of Law, University of South Carolina School of Law

Madam Chairwoman, Mr. Chairman, and members of both subcommittees, thank you for the opportunity to appear here today. My name is Josh Eagle, and I am an Assistant Professor of Law at the University of South Carolina School of Law in Columbia, South Carolina. You have asked me to discuss the potential benefits of marine spatial planning as it relates to the development of offshore energy projects. I have extensive experience in this area, having written and co-written numerous papers on the topic, and I am happy to provide you with my views and to answer your questions. I am testifying today in my individual capacity.

1. Introduction

The term "marine spatial planning" refers to a process that governments can use to allocate limited ocean resources to various defined uses, such as oil and gas development, wind farms, recreational fishing, commercial fishing, and marine conservation. The benefit of spatial allocation—that is, the allocation of defined areas to defined uses—is that it allows incompatible uses to be physically separated and synergistic uses to be co-located. The process of marine spatial planning ultimately produces a two- or three-dimensional map on which specified ocean areas would be designated for particular uses.

Marine spatial planning is often linked to the concept of "ocean zoning." That term refers to the system of laws or regulations that would govern the use of each area that is established through the marine spatial planning process. These laws or regulations would, among other things, specify the types of resource uses allowed or not allowed in given zones, as well as standards and procedures for permitting allowable uses within those zones. The application of marine spatial planning without the implementation mechanism of ocean zoning is theoretically possible, but probably is not desirable. For this reason, and for the sake of brevity, I will hereinafter refer to the combination of marine spatial planning and ocean zoning as "marine planning and zoning."

While the idea of marine planning and zoning is a relatively new one, the use of planning and zoning in other contexts dates back nearly one hundred years. In 1916, New York City became the first city in the United States to adopt a comprehensive municipal zoning ordinance. Today, nearly all cities and towns with over 10,000 residents have zoning ordinances in place. Pursuant to state zoning enabling acts, these municipal ordinances must be "in accordance with a general plan," that is, a plan for current and future land use within the relevant jurisdictional boundaries.

As it supplies a useful analogy, it is worth briefly noting the purposes of municipal planning and zoning. It has three primary functions:

- First, the planning process provides an opportunity for elected officials and voters to assess available public and private resources, to consider options for alternate development patterns, and to decide—through a highly democratic process—what kind of city they wish to build. While some towns may, for example, desire to preserve their historic character, others may prefer to encourage redevelopment of older neighborhoods.
- Second, the use of planning and zoning helps to prevent costly conflicts between neighboring landowners. Allowing a hog farm to be built in the midst of a residential neighborhood benefits neither the farm nor the neighborhood and would likely lead to litigation. Planning and zoning is meant to preempt this type of dispute.
- Third, planning and zoning can provide security and certainty to current landowners and potential investors. Zones established by a municipal ordinance pursuant to a comprehensive plan will generally specify whether a particular land use is presumptively permitted or prohibited. These presumptions create a rel-

atively stable legal environment. Predictability is extremely valuable to both commercial landowners and homeowners.

Each of these three rationales is even more compelling in the marine context than it is in the municipal context. In other words, if planning and zoning makes sense in the municipal context, it makes even more sense as a tool for rational development of the United States' marine resources.

2. Rationales Supporting Marine Planning and Zoning

A. Planning: Science, Values, and Democracy

The value of planning is particularly high in the context of marine resource development because marine resources are public resources that government holds in trust for its citizens. The government's trustee responsibility for these resources mandates that it make fully informed, rational decisions. Such decisions can only be made after a thorough scientific and economic assessment of ocean resources. This kind of thorough scientific and economic assessment is at the core of any comprehensive planning effort. The alternative to planning, that is, ad hoc permitting in a multiple-use system, leads only to the generation of information regarding the project for which a permit is being sought. A decision made on the basis of project-specific information is likely not to be optimal, mainly because it will not take into account a broad range of alternatives to the proposed action.

Furthermore, as beneficiaries of the "ocean trust," citizens should be provided with the most democratic, transparent means of input into government decisions on resource use. Because it would take into consideration all potential uses of ocean resources, and because the basis for it is scientific and economic information, a comprehensive planning process would create ideal conditions for quality public input.

Because many of the important decisions regarding allocation of marine resources would be made during the temporally compact initial planning phase, interest groups of varying political strength and economic resources would be placed on a relatively equal footing. Groups with fewer resources and less influence typically do not fare well in ad hoc permitting systems, because such systems require frequent, long-term, and expensive participation. The inability to participate on a regular basis in administrative processes can lead to the use of litigation as a tool for intervention. This may not be the most efficient means of providing input into resource allocation decisions.

With the best available scientific and economic information in hand, government can fulfill its responsibilities to allocate marine resources efficiently and through as fair a process as possible. A transparent, democratic process ensures that the public will have a powerful voice in deciding how its oceans will be used in the future.

B. Avoiding Conflicts Among Competing Public User Groups

There are a wide range of competing uses for limited marine resources and ocean space. In many cases, proposed uses of particular areas will directly conflict. The same square mile of ocean space cannot, for example, be used for both seabed mining and marine conservation. In other cases, two proposed uses could conflict by virtue of the fact that they were sited in close proximity. Nearby mining activities may, for example, lessen the effectiveness of a conservation-oriented marine protected area.

Marine planning and zoning allows for some areas of the ocean to be dedicated to uses that are not compatible with any other uses. This ensures that public user groups who desire or depend upon the availability of that use will indeed be provided for. At the same time, planning and zoning provides a mechanism whereby competing, conflicting uses may be located geographically far enough apart so that they do not impose negative externalities on one another. So, for example, planning and zoning make it possible to locate oil and gas production facilities at a safe distance from important commercial fishing grounds.

The use of planning and zoning to avoid user group conflicts is even more important in the ocean context than it is in the municipal context. Where private land is involved, as it is in municipal planning and zoning, landowners who are not protected from externalities by a zoning ordinance have the option of defending their property interests through the court system and common law nuisance actions. In lieu of landowners, the political landscape of the ocean features a range of interest groups, each of which represents a segment of the American public, each of which has differing ideas on how ocean resources should be used, and none of which has a private property interest in the resources themselves. Without property interests to support a nuisance action, and without comprehensive planning and zoning, citizens who value ocean space for one particular use—commercial fishermen, recreational fishermen, the oil and gas industry, wind farmers, marine conservationists—have little to no power to ensure that other uses do not infringe.

It should also be noted that planning and zoning creates the opportunity not only to separate incompatible uses, but to locate zones so as to maximize synergies. There is evidence, for example, that recreational fishermen receive significant benefits from being allowed to fish along the boundaries of marine protected areas. The placement of these two types of areas adjacent to one another would thus benefit not only recreational fishermen, by providing them with more and more valuable fishing opportunities, but would also benefit marine conservation by generating political support for better management and enforcement within the protected area.

C. Security and Certainty

As noted above, the alternative to comprehensive marine planning and zoning is ad hoc permitting. In addition to requiring an extensive and expensive public process for each specific new proposed project, an ad hoc approach creates a great deal of uncertainty.

Certainty is particularly important in the marine context. Many desired uses of marine resources require substantial capital investment. Each new oil platform, for example, costs billions of dollars to construct and install. The end result of a comprehensive planning process would be that certain ocean areas would be presumptively dedicated to specific uses. Such presumptions, which would be set out in the laws governing permit processing, would create a great deal more certainty than laws mandating ad hoc approvals. Certainty could be increased even further if both Federal and state waters were included in the planning process.

The certainty provided by planning and zoning would also benefit other types of interest groups, such as conservationists and recreational fishing groups, that do not make large financial investments. To the extent that such groups are allocated a fair amount of ocean space, the certainty provided by zoning would mean that they could expend fewer resources in opposing permitting processes in other areas, confident in the knowledge that some areas of the ocean had been presumptively dedicated to their preferred uses.

There are several examples from around the world that illustrate that commercial ocean users respond positively to the planning and zoning of public space, owing to the certainty it creates. In New Zealand, for example, some members of the fishing industry welcomed the creation of marine conservation zones because their creation was accompanied by a legal presumption that commercial fishing would be allowed in areas outside the conservation zones. Similarly, in Canada, the timber industry agreed several years ago to the creation of large forest reserves in exchange for the presumptive right to log other nearby lands.

3. Is Planning and Zoning Likely to Be Expensive? Will it Slow Development?

Any assessment of the costs of planning and zoning, including the costs of potential delays in project development, must compare the costs of planning and zoning against the costs of an ad hoc permitting system.

It is true that planning and zoning would likely require a several year study period, during which time the planning body—likely a Congressionally-chartered commission—would gather information, conduct public hearings, consult with experts, and develop its final plan. Once Congress considered and adopted the plan and implementing legislation, however, costs and delays associated with project development should be far less than they would be under an ad hoc system.

The reasons for this are three-fold:

- First, ad hoc systems require public process in connection with each new permit considered. While permits for individual projects would still be required within the context of a planned and zoned system, the process associated with such projects would likely be more abbreviated.
- Second, agencies implementing zone rules will have a much simpler task processing applications because of the specific legislative guidance inherent in such rules.
- Finally, interest groups' judicial challenges to agency actions under a presumptive-use system should be less frequent and more easily resolved. This should be true not only because the presumptive rules would make it more unappealing to sue over the granting of a permit for a presumptively-permitted activity. It should also be true because the groups likely to object to permits will have already been centrally involved in the initial planning process. During that process, they will have conceded that some areas could be used for what they consider to be undesirable projects in exchange for the dedication of other areas to their own preferred uses. In other words, the negotiation would take place through the planning process and not on an ad hoc basis through the court system.

4. Conclusion

There are three strong rationales for employing marine planning and zoning as a framework for developing the United States' offshore marine resources:

- First, the planning process would lead to better and more transparent decisions and to more and better public participation.
- Second, planning and zoning allows for the separation of incompatible uses and the co-location of synergistic uses; each of these would promote more efficient use of resources.
- Third, planning and zoning reduces uncertainty for both commercial and non-commercial interests.

Each of these rationales supports the use of marine planning and zoning and illustrate why it would be superior to existing or proposed ad hoc decision-making systems.

Ms. BORDALLO. Thank you very much, Professor Eagle, for your comments.

And now I would like to recognize Dr. Kitsos, and thank you for joining us today. You can begin.

STATEMENT OF THOMAS KITSOS, PH.D., CONSULTANT, JOINT OCEAN COMMISSION INITIATIVE

Mr. KITSOS. Madame Chairwoman, Mr. Chairman, members of the Subcommittee. At the beginning of this decade, both the private sector and the public sector each established an ocean commission, a blue-ribbon commission to review the state of our oceans and coasts, and to make recommendations for any needed policy changes.

The Hon. Leon Panetta headed the privately funded Pew Commission, and Admiral James Watkins headed the U.S. Commission on Ocean Policy.

Many factors were at play in the preceding decade that led to the establishment of those two commissions, but a deepening concern about the growing threats to a healthy ocean ecosystem would be near the top of the list. And the aftermath and the legacy of the Exxon Valdez oil spill, the 20th anniversary of which we are marking today, was one of the more visible and noteworthy events that focused the attention of the Nation on the sea and the vulnerability of the living resources that live in, or are dependent on, the ocean for sustenance.

On this memorable day, I would like to thank you for the opportunity to testify on behalf of the Joint Ocean Commission Initiative on OCS energy activity and the health of our oceans. And as requested, I will address the work of the commissions and the Joint Initiative, specifically the recommendations related to ocean governance and an ocean trust fund that is directly on point on today's hearing.

Our ocean governance system is essentially broken, largely attributable to fragmented management, uncoordinated decision-making, and isolated policies. We need to establish a national ocean policy to maintain and protect and restore our ocean health.

We should strengthen Federal leadership and coordination. We need to appoint a National Ocean Advisor to the President, who is a member of the White House Senior Advisory Team responsible for setting and overseeing the implementation of domestic policy. This advisor should serve as a chair of the Committee on Ocean Policy, a committee that is already in existence. But that com-

mittee needs to be strengthened by making it the principal ocean entity within the Executive Office of the President, responsible for, among other things, improving coordination among ocean agencies and developing an integrated offshore planning and management regime, which are issues that both of my prior panelists here spoke to.

In a nutshell, Madame Chairwoman and Mr. Chairman, a voice for oceans needs to be institutionalized in the Executive Office of the President.

Given all the activities that are likely to happen in our coastal margins and our oceans, we need someone and some institution in the White House responsible for interagency coordination of ocean and coastal jurisdiction and activities.

Good policy requires good planning, and good planning requires good coordination. And moving toward an integrated, spatially based planning and management approach for the oceans is a promising process that is worth exploring.

The Commission on Ocean Policy noted in its final report, this nation needs a coordinated offshore management regime that encompasses traditional and emerging uses, and is adaptable enough to incorporate uses not yet clearly foreseen.

An example was played out to some extent last week by the signing of the MOU by the Department of the Interior, and FERC, which has already been referred to. It is interesting that that MOU may address some of the concerns between certain ocean-based alternative energy activities and industries, offshore wind and wave power, and claims of sweeping stretches of the sea needed to be sorted out.

Those who are currently working offshore, and those who are planning or hoping to, should want as predictable a system of management and regulation as possible. We believe that certain changes in ocean governance will facilitate that administrative certainty.

I would now like to end by talking about one of my favorite subjects, which is money. As the New York Times noted recently in an editorial on the Land and Water Conservation Fund, there is an interesting symmetry in diverting some offshore royalty money to that fund for the acquisition of threatened lands and expansion of outdoor activities: namely, using dollars raised from depleting one natural resource to protect others.

This is exactly on point, and should be adapted to our oceans. A fund for the reinvestment of the dollars coming from the OCS in the balanced management and protection of our oceans.

Specifically, the Administration and Congress should work together to establish an ocean investment fund, using a significant portion of the resources once generated by private commercial activities occurring in Federal waters on the OCS, dedicated to provide financial support for national, regional, and coastal state and local programs related to understanding and managing our oceans and coasts and Great Lakes.

Currently, virtually all Federal revenues come in from oil and gas, but we think these new and emerging technologies—offshore wind, tidal power, and other sources—will generate revenues in the

near term. And all of this money should be credited to the ocean investment fund.

In summary, an ocean investment fund should be established in the U.S. Treasury, capitalized by a significant portion of the resource funds from activities that include oil and gas development, as well as new and emerging uses.

The fund should go to all coastal states, as determined by Congress, and used for good, sustainable ocean conservation purposes. And it should go to, also a chunk should go to the Federal government to try to recoup some of the losses that we suffered in budgetary matters to address climate change and other needs on behalf of the Federal government.

In conclusion, our oceans and Great Lakes provide an abundance of wealth resulting from numerous activities that are vital to our economy, national security, and environmental health. They are major contributors to our economy, with half the nation's gross domestic product generated in coastal watersheds.

A national ocean policy should be established. Certain institutional changes need to be made in our ocean governance system, and a coordinated offshore management regime should be established to protect our resources, and reduce multiple-use conflicts.

Finally, a portion of the revenues we receive from activities in the oceans should be reinvested in, and dedicated to, those oceans.

Thank you, Madame Chairwoman. I would be happy to answer questions.

[The prepared statement of Mr. Kitsos follows:]

Statement of Dr. Thomas Kitsos, Consultant to The Joint Ocean Commission Initiative

Chairman Costa, Chairwoman Bordallo, and Members of the Joint Subcommittees. On behalf of the Joint Ocean Commission Initiative, I would like to thank you for the opportunity to testify on OCS energy activity and the health of our oceans. In your letter of invitation, you asked that I address the work of the ocean commissions that preceded and led to the establishment of the Joint Initiative and specifically the recommendations of the Commissions and the Joint Initiative related to ocean governance and an ocean trust fund.

The Joint Initiative is a collaborative effort of members of the U.S. Commission on Ocean Policy and the Pew Oceans Commission. The purpose of the Joint Initiative is to advance the pace of change for meaningful ocean policy reform. The Joint Initiative is co-chaired by Admiral James D. Watkins (U.S. Navy, Ret.) who was Chairman of the U.S. Commission on Ocean Policy. Up until quite recently, Admiral Watkins' co-chair on the Joint Initiative was The Honorable Leon Panetta who had headed up the Pew Oceans Commission and who, as you know, was confirmed last month as the Director of the Central Intelligence Agency. In his new capacity at the CIA, Mr. Panetta will no longer be able to serve as Joint Initiative Co-Chair.

As a little background, the Joint Initiative communicated with the offices of each major party candidate during the presidential campaign about an ocean policy agenda and, in September, 2008, issued a report entitled Changing Oceans, Changing World: Ocean Policy Priorities for a New Administration and Congress: Recommendations from the Joint Ocean Commission Initiative. The essence of the report, a copy of which is appended to this statement, was to inform each candidate that, for a broad range of reasons, our oceans are in crisis and that to begin to meet the challenge of that crisis, it is essential that the new administration:

1. Establish a coherent national ocean policy and improve federal coordination of ocean science and resource management to protect, maintain, and restore ocean health and enhance economic opportunities.
2. Invest in ocean science to rebuild capacity for research so that we can better understand and predict climate change and its impacts on oceans and coastal economies.

3. Bolster U.S. international leadership by acceding to the Law of the Sea Convention in order to secure the country's economic and national security and reestablish the United States as the preeminent steward of ocean health.

The first recommendation, the statement on ocean policy, encompassed both of the issues in which your subcommittees have expressed an interest: ocean governance and an ocean trust fund. Specifically, the Joint Initiative recommended that the United States should establish a national policy to protect, maintain, and restore the health of ocean ecosystems and enhance the sustainability of ocean and coastal economies. Further, it should require that federal agencies administer U.S. policies and laws to the fullest extent possible consistent with this national policy. Based on this policy, the four components of a new ocean governance regime include:

Strengthening federal leadership and coordination. Appoint a National Ocean Advisor to the President, who is an integral member of the White House senior advisory team responsible for setting and overseeing the implementation of domestic policy. Designate the Advisor as the chair of the current Committee on Ocean Policy. Strengthen the Committee by making it the principle entity within the Executive Office of the President responsible for improving coordination among ocean agencies, developing an integrated offshore planning and management regime, and enhancing leadership in support of a national ocean policy and implementation of a broader climate change strategy.

Codifying and reorganizing the National Oceanic and Atmospheric Administration (NOAA). Codify NOAA as the lead federal civilian agency with responsibility for coasts, oceans and Great Lakes. Consideration should be given to reorganizing the agency along its primary functions—assessment, prediction and operations; resource and area management; and scientific research and education—to enhance the agency's capacity for providing climate-related services, coordinate federal ocean science, management, and education programs, provide support for regional and state ocean management efforts and improve efforts to respond to climate change.

Supporting regional approaches. Support regional solutions and improved coordination across all levels of government to promote more integrated approaches and coordination among federal, state and local governments around the goal of ocean ecosystem health.

Establishing a national ocean trust fund. Create an ocean trust fund, incorporating revenues generated by economic activities occurring in federal waters on the OCS, to support federal, state and local activities related to understanding and managing our oceans,

These, then, formed the foundation of the Joint Initiative's pre-election ocean governance recommendations based on its assessment of the work of the two commissions and the record of the subsequent years since their reports were issued. It is a record of a national failure to act on most of the core recommendations of the Commissions including the establishment of a new ocean policy framework and a coordinated ocean governance regime; securing Senate support for U.S. accession to the Convention on Law of the Sea; codifying and reorganizing NOAA, significantly increasing federal support for regional coordination efforts, and addressing chronic underfunding of ocean and coastal science, management, and conservation.

After the 2008 election, the Joint Initiative organized a series of meetings with Obama transition teams focusing on the natural resource policy and planning efforts of the President-elect's incoming administration. Along with the Monterey Bay (California) Aquarium, the Joint Initiative then convened a workshop with ocean leaders in January of this year in Annapolis. Attendees included individuals from research institutions and academia, environmental organizations, foundations, and ocean industry groups. Through discussions at the workshop, the Joint Initiative is currently developing a more detailed set of recommendations focused on the priority areas of ocean and coastal governance reform, science and research, international leadership, and funding. The result of the workshop will be a report to national leaders that builds upon and retains the title of Changing Oceans, Changing World. Recognizing the pressing national needs associated with climate change, energy policy, and rebuilding the economy, the report will demonstrate the strong linkages between ocean health and these priorities areas. The Joint Initiative will formally deliver Changing Oceans, Changing World to the Administration and Congress next month.

Although the Commissioners and staff of the Joint Initiative are still working on the final language of the report, some observations based on its past work and the discussions at Annapolis can be advanced now. Our ocean governance system is essentially broken, largely attributable to fragmented management, uncoordinated decision making, and isolated policies. A voice for oceans needs to be institutionalized in the executive office of the President. Interagency coordination of ocean and

coastal jurisdictions and activities, moving toward integrated, spatially based planning and management approaches, is essential, as we have seen in a number of examples in the last few years. As the U.S. Commission on Ocean Policy noted in its final report, "...(t)he nation needs a coordinated offshore management regime that encompasses traditional and emerging uses and is adaptable enough to incorporate uses not yet clearly foreseen" (An Ocean Blueprint for the 21st Century, p. 98).

One recent example of this that was played out to some extent last week—and of direct interest to these subcommittees—was the signing of a memorandum of understanding by the Interior Department and Federal Energy Regulatory Commission regarding federal oversight of offshore renewable energy projects on the OCS. Interior will handle wind projects and FERC will oversee hydropower projects, such as wave, tidal and ocean currents. Apparently another MOU dealing with the permitting and licensing of offshore projects is still in the works and Interior Secretary Salazar indicated that rules to set up alternative energy development may be finalized in a couple of months. This may address some concerns between certain ocean-based alternative energy industries—offshore wind and wave power—about claiming sweeping stretches of the sea, sometimes overlapping each other and igniting what has been described as modern-day allegations of "claim jumping", or a wild west atmosphere based on regulatory uncertainty.

We will have to see if all of the outstanding issues between these two agencies have been resolved and some additional time will be necessary to make that determination. However, it does appear that there is no dispute about the Mineral Management Services' jurisdiction over offshore wind projects and that clarification is very helpful in moving forward with at least one form of renewable power generated from the ocean.

This illustrates the relationship between the work of the commissions and energy development in the OCS. What the commissions emphasized and what the Joint Initiative has reiterated is that we need a far more coordinated ocean governance regime and a far stronger emphasis on the role of ocean science in a variety of policy areas, from climate change to energy. One promising process that can support more integrated management is a comprehensive, spatially based approach based on a stronger marine science foundation delineating general levels of acceptable activities and impacts for particular geographic areas in the ocean. This integrated, spatially based planning and management approach can provide greater clarity and predictability to ocean users, reduce conflicts, account for cumulative impacts on ecosystem health, and help achieve specific ecological, economic, and societal goals.

This is precisely the type of mandate that should be given to the enhanced Committee on Ocean Policy and would provide a common vision and enable an integrated and comprehensive approach to planning and managing ocean and coastal activities. For our oceans, the resources they hold, and the scientific information we need to manage them, are essential parts of the fundamental structure that supports our economy. Agriculture, transportation, fishing, recreation and tourism, and coastal development are all dependent upon information derived from ocean and coastal science.

And, importantly, oceans and marine science also relate closely to one of our highest national priorities: a clean and secure energy future. With abundant opportunities for wind, wave, tidal and thermal energy production and reserves of oil and gas, our oceans and coasts are a significant source of both traditional and clean, renewable, domestic energy. Advances in ocean science are critical to understanding the benefits and costs associated with these opportunities as the nation struggles to strike a new balance and realign its priorities in the face of a major economic and environmental transition.

This, then, is the broad, general background of the context of the work of the two ocean commissions and the Joint Initiative with respect to ocean policy, governance and science. There are two final issues that require mentioning given the primary subject of this hearing: OCS leasing moratoria/presidential withdrawals and the use of revenues from offshore development.

The two commissions took some slightly different positions on each. The U.S. Commission described the history of the development of moratoria and withdrawals but did not take a position on that issue. The Pew Commission did not carry an extensive discussion of the OCS moratorium but recommended that it be retained pending the completion of regional governance plans developed by ocean ecosystem councils. Since the filing of the reports and the follow-up work of the Joint Initiative, the Commissioners have not taken a position on the moratoria/presidential withdrawal, either while such moratoria or withdrawals were in place nor since they have been lifted. There is a clear understanding and acknowledgement that offshore oil and gas production is one of the important ocean activities in a mix of growing uses of the sea and is a large and important contributor to our economic and energy

life whether, as now, confined largely to the central and western Gulf of Mexico or allowed to move to newer so-called frontier areas in the future—decisions for the Administration and Congress to address.

Beyond the question of whether the OCS leasing program should be expanded into areas that had been under moratoria, the issue of the use of the revenue coming from the program was one on which there was considerable although not total commonality between the Commissions but one from which a clear action has been recommended by the Joint Initiative in a number of fora, including various public statements, letters and reports to Congress, implementation report cards, and other documents.

The critical need for additional money dedicated to the management and conservation of ocean and coastal resources has been a consistent and key principle of the Joint Ocean Commission Initiative from its inception. In effect, both Commissions addressed the issue of dedicated funding for implementing their recommendations, making the case that our oceans, coasts, and Great Lakes are major contributors to the U.S. economy, with half the nation's Gross Domestic Product generated in coastal watersheds.

The Joint Initiative strongly supports the establishment of an Ocean Trust Fund or Investment Fund in the U.S. Treasury, using a significant portion of the resource rents generated by the use of publicly-owned resources by private commercial activities carried out in federal waters on the OCS. This Fund should be dedicated to providing financial support for national, regional, and coastal state and local programs related to understanding and managing our oceans, coasts, and Great Lakes.

The monies for the Fund are readily available from existing offshore activity. Currently, virtually all federal revenues being generated from activities on the OCS are from oil and gas activities—averaging some $5-7 billion annually in recent years but as much as $18 billion in Fiscal Year 2008. Additionally, it is clear that converging economic, technological, demographic, and environmental factors make our oceans an attractive and challenging place for new and emerging enterprises. Marine aquaculture, bioprospecting, and a broad range of non-conventional offshore energy activities (e.g., wind, tidal, and wave power generation projects) are on the horizon and can and should generate federal revenues from the use of space on and resources of the OCS. The Joint Initiative believes that a significant portion of all such revenues coming from our oceans should be reinvested in our oceans and their management. Just as one must make an ongoing investment in the operation and maintenance of physical capital for it to remain productive, one must do the same with respect to natural capital. The Ocean Trust or Investment Fund and the conservation, management, and research activities it would support should be viewed as the operation and maintenance fund that supports the natural capital of the oceans, which generates these revenues in the first place.

The establishment of such a Fund would clearly demonstrate the Administration and Congress' commitment to our ocean and coastal resources. It would support both federal and state ocean related programs and greatly enhance our capacity for managing competing economic and environmental priorities along our oceans and coasts, strengthen our understanding of the oceans role in climate change, and clearly demonstrate a national commitment to restoring the health of one of our nation's greatest natural resources, our oceans and coasts.

This Fund would be a complementary scientific, natural resource management, and environmental (green) technological supplement to our ongoing economic recovery efforts. The critical contribution of our oceans, coasts, and Great Lakes to the nation's economy, current financial recovery efforts, and the generation of jobs; the various crises threatening those water bodies and their continued capacity to contribute to our fiscal recovery; and the intractable management challenges required to address such crises by the public and private sectors of our economy all support the need for a dedicated source of revenue from the national government to sustain our ocean resources.

At the national level, our failure to adequately invest in ocean and coastal science and management has severely limited the capacity of federal agencies to understand our oceans and coasts. In particular, better assessing the role of oceans in climate change continues to be a challenge, constraining our capacity to make informed decisions to address the impacts of such change on our coastal communities, economies, and ecosystems—impacts that include the effects of ocean acidification on the marine food web and coral reefs, sea level rise and the threats to public and private infrastructure, and the impact of rising ocean temperatures on fisheries and ocean health threats. Increasing our scientific understanding of the links between ocean climate change and improving our management strategies to mitigate and adapt to the resulting effects require substantial fiscal resources for both federal and state agencies.

The Joint Initiative recommends that the key institutions in the Executive Office of the President with oversight responsibility for oceans, science, climate, and energy policy—the strengthened Committee on Ocean Policy, the Office of Science and Technology Policy, the Council on Environmental Quality, and the Assistant to the President for Energy and Climate, be given authority to make recommendations for allocating Trust Fund revenues among federal agencies on an annual basis. This would help facilitate interagency collaboration and coordination by supporting interdisciplinary and integrated programs and activities that have difficultly securing funding through the individual departmental budgeting process.

With respect to our coastal states and local communities, it is at these levels where much of the day-to-day work of integrated, multiple use management in the coastal zones is carried out and it is where, among other phenomena, sea level rise will have a significant impact on coastal infrastructure and habitats and adaptation strategies will be required. Efforts at establishing and enhancing regional ocean partnerships is another policy area emphasized by the Joint Initiative and one which requires fiscal as well as other support and partners at the national level.

In this time of economic crisis many demands will be made on the revenues coming from the OCS, particularly if additional offshore areas are open to leasing and development. Nevertheless, we believe that the investment of a significant portion of these revenues in our oceans, coasts, and Great Lakes is consistent with the President's and Congress' priorities to support economic and energy security initiatives and enhance natural resource management. This includes supporting green technologies such as alternative offshore energy production and a commitment to balancing economic and environmental impacts of such projects in federal waters.

In summary, an Ocean Trust or Investment Fund should be established in the U.S. Treasury capitalized by a significant portion of the resource rents from activities that include offshore oil and gas development as well as new and emerging uses such as marine aquaculture, bioprospecting, wind farms and other alternative, nonconventional offshore energy generation technologies.

The Fund should be allocated (1) to all coastal states, as determined by Congress, and used for the conservation and sustainable development of renewable coastal resources and the management of their coastal zones including the development of new methods of addressing adaptation to climate change and (2) to the federal government, allocated among agencies as determined by the primary ocean policy entities in the Executive Office of the President, to begin to reverse the serious gap in scientific research and integrated planning and management, and other national responsibilities to address pressures on our oceans, coasts, and Great Lakes.

The activities and programs supported by the Fund, among the coastal states and federal ocean agencies, must be consistent with any national ocean policy established by executive order or legislation. Finally, none of the proceeds provided through the Fund should replace regular appropriations nor should any of the programs currently receiving OCS oil and gas revenues be adversely affected by this additional allocation.

Mr. Chairman, Madam Chairwoman: The Joint Ocean Commission Initiative stands ready to work with your subcommittees on a broad range of ocean legislation including a new policy to protect the health of our oceans, ocean governance efforts, and a balanced and comprehensive approach to the development of an offshore regime for the management of conventional and renewable sources of energy including the critically important establishment of an Ocean Trust or Investment Fund.

Thank you very much for the opportunity to appear before you this morning and I would be happy to try to answer any questions you may have.

[NOTE: The report entitled "Changing Oceans, Changing World: Ocean Policy Priorities for a New Administration and Congress: Recommendations from the Joint Ocean Commission Initiative" has been retained in the Committee's official files.]

Ms. BORDALLO. Thank you, Dr. Kitsos, for your testimony, and for the many years of service, both on Capitol Hill and in the Administration, working on marine conservation and energy development issues. And I also am very interested in hearing about your reorganization suggestions.

Finally, our final witness this morning is Mr. Diamond. Welcome, and please begin.

STATEMENT OF ROBBIE DIAMOND, PRESIDENT AND CEO, SECURING AMERICA'S FUTURE ENERGY

Mr. DIAMOND. Thank you, Madame Chairwoman, Mr. Chairman, and members of the committee. I would like to thank you for giving me this opportunity to speak to you regarding one of the greatest challenges facing our country today: providing secure, sustainable, and affordable energy to power the American economy.

As you know, I came before you, I come before you today as the President of Security America's Future Energy, or SAFE. SAFE was founded in 2004 to deliver an urgent call to action. Our nation's energy security is at risk, and leadership, ingenuity, and commitment are required to protect current and future generations.

In December 2006, SAFE's Energy Security Leadership Council, a nonpartisan group of business executives, retired senior military officers, led by Frederick W. Smith, Chairman, President, CEO of FedEx, and Gen. P.X. Kelley, 28th Commandant of the U.S. Marine Corps, released its recommendations to the Nation on reducing U.S. oil dependence. A set of policies designed to reduce our nation's energy vulnerability.

A year later Congress passed, and President Bush signed into law, an energy bill largely mirroring many of our recommendations, principally reforming and strengthening fuel economy standards. That was only a first step. There is much more to do.

The American economy continues to operate at risk. Today 97 percent of our transportation energy needs are met by petroleum, with no readily available substitutes.

In September, SAFE released a comprehensive new plan that presents a long-term vision for the dramatic transformation of our energy system. It is called a National Strategy for Energy Security, which establishes a goal of electrification of the short-haul transportation system in the United States, and provides a multifaceted set of proposals to help achieve that long-term goal.

Electrification of transportation would allow cars and light trucks to run on energy produced by a diverse set of resources: nuclear, natural gas, coal, wind, solar, geothermal, and hydroelectric. The supply of each of these fuels is more secure, and the price is less volatile than oil. In the process, electrification would shatter the status of oil as the sole fuel for the U.S. ground transportation fleet.

In short, electrification is the best path to fuel diversity that is indispensable to addressing the economic and national security risks created by our oil dependence.

It is also crucial that we take important steps to safeguard our economy and national security, while we transition to an electrified transportation system. Increasing domestic production of oil and natural gas is an important component of this process. Petroleum and petroleum products represented more than $380 billion of our total $677 billion trade deficit in 2008.

In other words, our addiction to oil accounted for more than 56 percent of our entire national trade deficit. This is an unprecedented and unsustainable transfer of wealth to other nations.

While it is often noted that the United States holds just 3 percent of the world's crude oil reserves, this figure only tells half the story. In fact, the U.S. possesses substantial reserves of oil that

have yet to be exploited. Current undiscovered, technically recoverable reserves are at least 100 billion barrels, according to numerous U.S. Government reports.

According to the Minerals Management Service, the offshore oil and gas industry produced 10.2 billion barrels of oil between 1985 and 2007, with a spill rate of just .001 percent.

During the turbulent 2005 Atlantic hurricane season, when Hurricanes Katrina and Rita tore through the Gulf of Mexico, approximately 75 percent of the 4,000 Federal OCS oil and gas facilities in the Gulf of Mexico were subjected to 175-mile-per-hour winds and other hurricane conditions. Despite serious damage to 168 platforms, 55 rigs, and more than 560 pipeline segments; however, the U.S. Coast Guard and MMS reported what they called no major oil spills.

Now that Congress has allowed the OCS moratoria to expire, it is time to put in place a rational offshore energy development program that leverages advances in technology and renewables to produce the most cost-effective oil supplies, while safeguarding our economy.

There have been remarkable advances in offshore and gas production technology in recent decades. These advances should help reframe our debate about the safety of offshore development.

Subsea wellheads, long-distance tiebacks, seafloor separation units allow for a minimum surface presence throughout the life cycle of a project, and also provides more flexibility to site infrastructure.

We can look across the world to see examples of nations using innovative technologies and processes to safely produce oil and natural gas. Norway, for example, is currently the third largest exporter of natural gas, and the seventh-largest petroleum exporter, and is widely recognized as an environmentally progressive nation.

Norway has a very collegial approach to petroleum regulation. Generally the government and industry consult on establishing long-term targets for development, and they work together to achieve those goals in a way that fits within Norway's national social framework.

In practice, this means that the government and industry consult on establishing desired outcomes, not just for resource development and output, but also for environmental impact, technological standards, and performance metrics.

Other nations are using new technologies to produce safely. Total Pazflor's deepwater project off the shore of Angola, for example, is utilizing a single floating processing storage and offloading unit to manage an undersea network of 109 miles of pipeline, and 51 miles of umbilicals, expected to produce 220,000 barrels of oil per day. This is seven times the size of Paris, with one little rig.

On Russia's Sakhalin Island, Exxon-Mobil has drilled seven miles horizontally under the seabed to access resources, without puncturing the seabed, which will minimize any chance of a spill.

This technique has also been used by the United Kingdom to develop Pool Harbor, an ecologically sensitive and archaeologically important area, from a disguised onshore drilling pad.

So we have to think about our areas differently. The Atlantic, the Pacific, the Gulf of Mexico, and Alaska. I would also say we should

consider different types of areas: areas that already have infrastructure, areas that require geological surveying prior to any licensing, and sensitive areas that can maybe mimic some of these techniques and processes in other countries.

So let me just be clear. We cannot drill our way to energy security. Ultimately, the best way to secure our future is by transitioning to an economy, and specifically to a transportation system, that is no longer dependent on petroleum. But that cannot happen overnight. And we must take every step to protect our economy and our national security in the interim.

Increased domestic production of oil and natural gas is not the only answer, but is a crucial part of the solution. And we shouldn't, we ignore it at our own risk.

Thank you very much.

[The prepared statement of Mr. Diamond follows:]

Statement of Robbie Diamond, President and CEO, Securing America's Future Energy (SAFE)

Good morning, Chairman Costa, Chairwoman Bordallo, Congressman Lamborn, Congressman Brown, and members of the Committee. I would like to thank you for giving me this opportunity to speak to you regarding one of the great challenges facing our country today: providing secure, sustainable and affordable energy to power the American economy.

As you know, I come before you today as the President of Securing America's Future Energy (SAFE). SAFE is action-oriented, non-ideological, and focused on results. We are committed to advocating for an effective package of energy policy reforms, believing that the path forward will be defined by a combination of solutions that address both the supply and demand sides of the energy equation.

SAFE's central message can be summed up as follows: there is no silver bullet for addressing America's formidable energy challenges. Even the most promising policy responses entail difficult trade-offs, and improving U.S. energy security will require a massive disruption of the status quo in many respects. Too often in Washington, however, meaningful changes in important and longstanding policies are obstructed by parochialism, influential industries, and ideological interest groups that see success in the maintenance of the status quo.

To be effective in this environment, SAFE has enlisted the vocal support of a group of prominent business leaders and retired senior military officers known as the Energy Security Leadership Council (Council). The Council is co-Chaired by Frederick W. Smith, Chairman, President, and CEO of FedEx Corporation, and General P.X. Kelley (Ret.), 28th Commandant of the United States Marine Corps. The Council represents a substantial effort to support comprehensive, long-term policies to reduce U.S. oil dependence and improve energy security. Its members have worked aggressively to build bipartisan support, and their track record speaks for itself.

In December 2006, the Council released a report entitled *Recommendation/s to the Nation on Reducing U.S. Oil Dependence.* The report laid out a comprehensive blueprint for energy security, including: demand reduction through reformed and increased fuel-economy standards; expanded production of alternatives; and increased domestic production of oil and natural gas. The Council collaborated with Senators Byron Dorgan (D-ND) and Larry Craig (R-ID) to design legislation incorporating the principal elements of the *Recommendations.* This resulted in the "Security and Fuel Efficiency Energy Act of 2007 (SAFE Energy Act)."

In December 2007, Congress passed and President Bush signed into law an energy bill that honored the *Recommendations* by (1) dramatically reforming and strengthening fuel-economy standards and (2) mandating a Renewable Fuel Standard that will displace significant quantities of gasoline using advanced biofuels such as cellulosic ethanol.

That was a significant accomplishment, but was only a first step. There is much more to do. The reality is this: our nation's dependence on oil—much of it imported and the majority used in our transportation sector—still represents a grave threat to our economic and national security. Now that we are, as a nation, pointed in the correct direction, it is time to help facilitate the transformation to the next generation of transportation technology that is as inevitable as it is necessary.

* * *

SAFE was founded in 2004 to deliver an urgent call to action: the nation's energy security is at risk, and leadership, ingenuity, and commitment are required to protect current and future generations. In the five years that have passed since then, Americans have been reminded of the very real consequences of oil dependence and the threats to this nation's economic and national security. If we continue down the current path, economic weakness and decay at home will continue to threaten American power and influence abroad.

Recent events provide a useful benchmark for gauging both the vulnerability of our transportation system and the consequences of an actual energy crisis. Between January 2003 and July 2008, benchmark crude oil prices increased nearly five-fold, from about $30 per barrel to almost $150 per barrel. The run-up in prices was made worse by significant short-term price volatility. Between May 2 and July 3, 2008, oil prices spiked by $30 per barrel—an increase of 25 percent.

Indeed, while we are all aware of the sharp financial burden on U.S. households that face resets in their adjustable rate mortgages—a legitimate and significant concern—the increases in energy costs have been on the same, or even a greater, order of magnitude.

A typical subprime borrower with a poor credit history who bought a $200,000 house in 2006 with a 2 year/28 year ARM with a 4 percent teaser interest rate for the first two years would have seen monthly mortgage payments increase from about $950 a month before the reset to about $1,330 after the reset—an increase of about $4,500 a year. Meanwhile, the median household in America saw its household energy costs increase by roughly $1,600 a year during the same two-year period. But this type of increase in energy costs affected all U.S. households—not just the one household in 20 that held a subprime mortgage.

All of these developments stemming from higher oil prices caused a noticeable slowing of economic growth. The U.S. economy lost more than 700,000 jobs between December 2007 and the beginning of September 2008, and the unemployment rate increased from 4.5 percent to 6.1 percent—all before the financial crisis truly hit later in September. In fact, as early as last August, many economists believed the U.S. economy was already on the verge of recession, largely driven by sharply rising and volatile oil prices. This put banks and Wall Street firms in a weakened financial state, with sharply eroded profit positions, even before the credit situation reached its crisis point.

Despite these well-known dangers, the American economy continued to operate at risk, with almost no substitutes for petroleum products and very few alternatives to driving. Today, 97 percent of our transportation energy needs are met by petroleum, and the transportation sector accounts for 70 percent of U.S. oil consumption.

Our mistakes have been costly. Sharply higher oil prices had a devastating effect on household, business, and public sector budgets, and effectively functioned as a tax on the economy. One recent estimate by researchers at the Oak Ridge National Laboratory placed the combined cost of foregone economic growth and economic dislocation at nearly $300 billion in 2008. Rising fuel prices also significantly weakened U.S. automakers, whose relatively inefficient but high-margin large vehicles were virtually unsellable for a period of several months.

Finally, the U.S. exported hundreds of billions of dollars to pay for imported oil. Based on initial estimates, the U.S. trade deficit in petroleum products reached an all-time high of $383 billion in 2008—56 percent of the total deficit in goods and services and more than the combined cost of the wars in Iraq and Afghanistan. This massive financial burden accelerated the deterioration of the American balance of payments and contributed to a weaker U.S. dollar.

Today, oil prices are near the bottom of a record slide. One hundred and fifty dollar oil and U.S. gasoline prices over $4.00 per gallon led to demand destruction, which was reinforced by the financial and economic crises and the resulting recession in which we today find ourselves. What is absolutely crucial to remember, however, and what history has taught us time and again, is that these economic conditions are temporary. As the economy recovers, and drivers return to the roads, our dependence will once again put us at the mercy of rising oil and gas prices—particularly if the existing vehicle fleet is fundamentally the same as it is today.

Despite some initial signs that consumer behavior had changed over the summer of 2008, this country will most likely return to its historical oil consumption pattern with prices back at a more palatable level. Indeed, anecdotal evidence supports that assertion. New vehicle sales once again shifted in favor of SUVs in December of 2008—for the first time since February of 2008. On New Year's Day, the Financial Times reported that U.S. sales of hybrid vehicles were down 53 percent in November compared to one year ago, and the decline steepened over the following months.

To be blunt, we can no longer be slaves to the boom and bust cycle of oil prices. Mr. Chairman, members of the Committee: what is required here is a dramatic transformation, and what that transformation requires is leadership from Washington. The dynamism, ingenuity, and entrepreneurial spirit of the American economy can take us wherever we want to go, but government has to set the priorities.

* * *

In September, SAFE and the Council released a comprehensive new plan that presents a long-term vision for the dramatic transformation that our energy system requires. A National Strategy for Energy Security offers a pathway toward a transportation system that draws on a diverse range of fuel sources; an electrical grid that is flexible, clean and robust; reduced import dependence through expanded domestic energy production; and an American research and development apparatus that sets the standard for the rest of the world. The plan will reduce the oil intensity of the U.S. economy, secure American manufacturing jobs, reduce the U.S. trade deficit, enhance the resiliency of the overall economy, and reinforce our foreign policy priorities.

The National Strategy establishes as a goal the electrification of the short-haul transportation system in the United States and provides a multifaceted set of proposals to help achieve that long-term goal. America's cars and SUVs consumed approximately 8 million barrels of oil per day in 2008—about 40 percent of the U.S. total. Aggressively transitioning this segment of the vehicle fleet to electrification has the potential to dramatically reduce U.S. oil consumption and fundamentally alter our energy profile. But that will require our national political leaders to embrace electrification not as a discrete and narrow initiative, but rather as a dominant policy theme to address our dependence on oil. And it will require a comprehensive, well-integrated approach.

Deteriorating U.S. energy security is largely due to the nearly complete absence of transportation fuel diversity. Not only are ever-greater amounts of oil required to fuel the U.S. transportation system, which is almost entirely dependent on oil, but the world oil market increasingly relies on supplies from hostile and/or unstable foreign producers. Electrification of transportation would allow cars and light trucks to run on energy produced by a diverse set of sources—nuclear, natural gas, coal, wind, solar, geothermal and hydroelectric. The supply of each of these fuels is secure, and the price of each is less volatile than oil. In the process, electrification would shatter the status of oil as the sole fuel of the U.S. ground transportation fleet. In short, electrification is the best path to the fuel diversity that is indispensable to addressing the economic and national security risks created by oil dependence.

Central to the success of such an approach will be the manner in which we, as a nation, manage the consequences of oil dependence while we transition to electrification. The upgrades in infrastructure and technology that are required are on the order of trillion dollar investments. Our ability to finance this decades-long commitment will be directly related to our economic well-being and national security. Therefore, what SAFE and the Council have put forward is not simply a laundry list of energy policy items. It is, instead, a strategy for mitigating oil dependence through practical measures in the short- and medium-term while we simultaneously invest in a post-oil transportation system for the long-term.

Increasing the domestic production of oil and natural gas is among the most effective near-term steps for improving American energy security. A high trade deficit—which has recently been directly fueled by petroleum imports—weakens the U.S. dollar and can act as a drag on total employment. Countries that run long-term deficits also tend to save less and borrow more. By moving forward with an expanded range of production areas on the Outer Continental Shelf (OCS), the U.S. can reduce its economic exposure to future prices spikes. Of course, ongoing improvements in efficiency and fuel diversification are critical as well. But to the extent that we will need some oil for the next several decades, there is a powerful case for producing more of it at home.

To be sure, the U.S. cannot solve its energy security dilemma through enhanced domestic oil production alone. Existing economically recoverable reserves are not comparable to projected demand, and U.S. oil production will not likely impact international energy prices in any substantial way in the short-term. However, by responsibly developing our own resources, we can reduce the impact of global oil prices on the current account balance and the national economy. We can also keep more currency at home, where it can be invested in productive domestic industries.

* * *

While it is often noted that the United States holds just three percent of the world's proved oil reserves, this figure incompletely represents our production potential. In fact, the U.S. possesses substantial reserves of oil that have yet to be exploited. Current undiscovered technically recoverable reserves are at least 100 billion barrels, according to numerous U.S. government reports. Just as the U.S. possesses vastly greater natural gas reserves than conveyed by proved reserves data, we have access to a large quantity of oil resources that currently sit undeveloped.

In some cases, the constraints on U.S. oil and gas development are economic and technical. In the Deepwater Gulf of Mexico, for example, projects take years to develop and rely on a global infrastructure chain that was overburdened during the run-up in oil prices that began in 2003. In other cases, however, the government has constrained the oil and gas industry's access to reserves on Federal lands. In particular, the ability of the industry to access high-potential areas of the OCS has, until recently, been restricted by long-standing congressional moratoria and presidential withdrawals. Proponents of these restrictions historically justified them on environmental grounds, but the most accurate and up-to-date data suggest that this position is no longer accurate.

According to the Minerals Management Service (MMS), the offshore oil and gas industry produced 10.2 billion barrels of oil between 1985 and 2007 with a spill rate of just .001 percent. In recent years, as standards and technology have improved, the rate of incidents has steadily declined. A recent report by the Congressional Research Service found that the annual number of oil spills in U.S. coastal waters declined by 50 percent from 1995 to 2004. In fact, nearly two-thirds of the oil that enters the North American coastal waters each year comes from natural seeps, with only 5 percent coming from oil extraction and transportation.

During the turbulent 2005 Atlantic hurricane season, when Hurricanes Katrina and Rita tore through the Gulf of Mexico, approximately 75 percent of the 4,000 federal OCS oil and gas facilities in the Gulf of Mexico were subjected to 175 mile-per-hour winds and other hurricane conditions. Despite serious damage to 168 platforms, 55 rigs, and more than 560 pipeline segments, the U.S. Coast Guard and MMS reported no "major oil spills." Total OCS petroleum spillage from the two storms has been estimated at 14,676 barrels—about the size of a single Olympic swimming pool.

Now that Congress has allowed the OCS moratoria to expire, it is time to put in place a rational offshore energy development program that leverages advances in technology to produce the most cost-effective oil supplies while safeguarding the environment. There have been remarkable advances in offshore oil and gas production technology in recent decades, and these advances should help to reframe the debate about the safety of offshore development. Subsea well heads, long distance tie-backs, and sea-floor separation units allow for a minimum surface presence throughout the life-cycle of a project and also provide more flexibility to site infrastructure.

Today, a single platform can produce oil and/or natural gas from a number of wells over substantial distances. A temporary surface presence is required for installation and maintenance, but current technologies offer the possibility of oil and gas production without the burden of numerous surface-level platforms. Consider the development plan recently announced by Total for its Pazflor deepwater project offshore Angola.

According to the Journal of Petroleum Technology, "the total subsea production system, linked by a network of 109 miles of pipelines and 51 miles of umbilicals, will be spread over a vast expanse of 232 square miles—some seven times larger than the city of Paris." Incredibly, a single floating processing, storage, and offloading (FPSO) unit will manage this system, which is expected to produce 220,000 barrels of oil per day. Also of note is that the size of the surface facility will be minimized by nature of the fact that Pazflor will feature cutting edge subsea separation units. These units will remove produced water and natural gas from oil on the sea floor, and then inject the produced water back into the reservoir.

Projects like this and others around the world are demonstrating that existing and emerging technologies can be leveraged in order to access significant resource volumes while maintaining a minimal environmental footprint. For fields close to the shore, for example, extended-reach drilling allows many different deposits to be drilled from a single onshore pad by drilling wells horizontally under the seabed. The longest such wells—over seven miles long—have been drilled by ExxonMobil on Russia's Sakhalin Island. Because the drilling does not puncture the seabed, it dramatically reduces the already exceptionally low possibility of oil spills. This technique has also been used in the United Kingdom to develop Poole Harbor—an eco-

logically sensitive and archeologically important area—from a disguised onshore drilling pad.

* * *

By maintaining a strong record on spills and developing improved technologies to minimize its environmental footprint, the offshore oil and gas industry has taken important steps toward earning public confidence. However, there are likely additional political and institutional challenges that remain to be addressed before access to undeveloped resources proceeds at an ambitious pace.

With this in mind, SAFE has recently examined the energy production policies of other developed nations around the world. In particular, the Norwegian model stands out as highly successful in balancing energy production with sustainability. Norway is currently the world's third largest exporter of natural gas and seventh largest petroleum exporter. Oil production was 2.5 mbd in 2007 and exports were 2.3 mbd. Gas production in 2007 was 8.7 bcf/d, with exports standing at 8.3 bcf/d. At the same time, Norway is often recognized as an environmentally progressive nation.

In 1991, Norway was among the first countries in the world to enact a carbon tax. Initially a pure tax, since Norway integrated its policy with the European Union's Emissions Trading Scheme (ETS) in 2006, half of the cost today comes from the fee for a required ETS permit. Because of these factors, the average emissions-per-barrel of oil produced in Norway is 7.1 kilograms. The EU average is 10.1 kg. The average in North America is 24.1 kg. As a company, StatoilHydro emits only 37 percent of the global average CO_2 emissions-per-barrel of oil equivalent produced.

Most of Norway's oil and gas resources are located offshore on the Norwegian Continental Shelf (NCS). Increasingly, commercially viable resources are being discovered above the Arctic Circle in areas with seasonal sea ice and sub-freezing temperatures. Coupled with strict governmental regulations on emissions and other discharges, operational complexity has forced companies like StatoilHydro to develop effective technologies for accessing new resources.

Norway's StatoilHydro is among the international oil companies that generally operate at the frontier of advanced offshore operations. At its Snohvit field in the Barents Sea, subsea structures have been tied to onshore facilities nearly 100 miles away. The project utilizes no surface-level structures offshore and separates and sequesters CO_2 from produced natural gas.

A key reason the Norwegian process works so well is that Norway has a very collegial approach to petroleum regulation. Generally, the government and industry consult on establishing long-term targets for development, and they work together to achieve those goals in a way that fits within the Norwegian national/social framework. In practice, this means that government and industry consult on establishing desired outcomes not just for resource development/output, but also for environmental impact, technological standards, and performance metrics.

In the U.S., such an inclusive approach might mean that states would share the benefits from development. For environmental groups, a stake in the process could mean an opportunity to help set performance standards in environmentally sensitive areas. Perhaps this could be done through a limited pilot program that aims to take a consultative approach to develop a bounded area with participation by a limited number of companies. The companies and agencies involved would have two goals: to develop the area and to refine the consultative methodology. In these limited areas, perhaps technology and environmental footprint could supplant monetary value as the metrics by which successful bids are identified.

Of course, there are real differences—cultural, political, and economic—between Norway and the United States. There are a relatively small number of operators in the Norwegian oil industry, and the government owns a 66.86 percent share of StatoilHydro—the most dominant player in the nation, accounting for 40 percent of total operatorships on the NCS. The size of the Norwegian economy makes the role of petroleum exports in social welfare crucial. Oil and gas production account for 48 percent of national export revenue and 24 percent of total GDP. Seventy-six percent of the revenue from NCS oil production accrues to the government. This stream of funding has allowed Norway to maintain the world's second largest sovereign wealth fund, the Norway Government Pension Fund. The Fund, valued at more than $370 billion, recently allowed the government to finance an ambitious economic recovery package, estimated at 2.3 percent of GDP.

To be sure, state revenues are high because the petroleum industry tax structure is extremely aggressive. The Norwegian corporate income tax rate is currently 28 percent, less than the United States. However, Norwegian companies also pay a Special Petroleum Tax on profits derived from production and pipeline transpor-

tation on the NCS. The Special Petroleum Tax is currently 50 percent, making the marginal tax rate on NCS petroleum income 78 percent. Other levies include a CO_2 emissions tax, a nitrous oxide fee, an abandonment fee, and area fees incurred after initial exploration.

* * *

A frequent criticism of planned OCS development in general is that new production will take many years to come online and that only marginal volumes can be expected from existing resources. Proponents of this view conclude that opening new federal areas for development is unnecessary. As noted above, SAFE recognizes that the overarching objective of any national energy policy must be to reduce U.S. oil consumption and therefore oil intensity. However, all solutions—whether one considers fuel-economy improvements, electrification, or advanced biofuels—will take time to implement. The technologies and processes for producing oil and gas are well understood and mature in their development. As the nation transitions to dramatically reduced oil consumption, it is critical that the oil we do use is produced at home to the maximum extent feasible.

It is also important to remember that resource estimates for many areas in question are based on data from the 1970s and 1980s. In its 2006 National Assessment, the Minerals Management Service noted:

> There is much uncertainty in the resource estimates due to a lack of adequate data, especially in those OCS areas which have been unavailable for exploration and development for many years. For example, outside of the active OCS producing areas, significant quantities of oil and gas resources are known to exist in part of the Eastern GOM and the California OCS, but in other areas, less is known about resource potential due to the availability of scarce or older data. In Alaska, there has not been any commercial exploration activity for many of the areas outside the Beaufort and Chukchi Seas for the past two decades.
>
> Due to subsequent access restrictions, there has been little or no opportunity to follow-up on the initial round(s) of exploration activity in many of these frontier areas. Yet, in the interim, there have been enormous advances in exploration, formation evaluation and exploitation technologies that could be utilized in these frontier areas today. Industry has made huge advancements in the technology of seismic data acquisition and processing, which allows for use of these data to create high resolution images of the subsurface to great depths.

Advances in technology have allowed for two critical developments in oil and gas recovery. First, 3D and 4D seismic have allowed geophysical data to be collected in a more precise manner that captures a more accurate snapshot of potential resources compared to older technologies. Moreover, when contrasted to technology from the 1970s and 1980s, the IT revolution has enhanced the speed, accuracy, and intricacy with which that data can be analyzed. As this process has occurred, MMS estimates of undiscovered technically recoverable resources in OCS areas have increased, most notably in the Gulf of Mexico where access has not been restricted.

Secondly, advances in offshore production techniques have allowed higher rates of resource recovery from resource plays that are father from shore, in deeper water, and in deeper geological formations. In short, there is simply no way to fairly assess potential resource production from existing data. As noted above, MMS and the administration must take the lead in offering leases in new areas, which will compel interested parties to contract for new seismic data. In contentious areas, MMS should employ alternative strategies, including acquiring the data itself.

Assuming commercial discoveries are made in the Atlantic, Pacific or Eastern Gulf planning areas, a logical and fair question is whether these resources can be produced in a time frame that will be useful. The answer is yes. According to a 2008 MMS report (Deepwater Gulf of Mexico 2008: America's Offshore Energy Future), as advanced technologies have become the mainstream, and as fuel transportation infrastructure has been installed, the timing for first production from new leases has decreased dramatically in recent years. Specifically, the report notes that "as industry gains experience in the deepwater areas of the Gulf, the time between leasing and production is reduced." This significant trend suggests that in well known areas close to existing infrastructure, such as the Eastern Gulf and some areas on the West Coast, first production can be expected by 2014-15.

To be clear, the long-term goal of any U.S. energy policy should be to replace our nation's heavy reliance on petroleum for transportation with a more diverse range of domestic energy sources. This can be accomplished through widespread electrification of short-haul travel, which will deliver energy to light-duty vehicles from

a range of feedstocks, including wind, solar, hydro, nuclear, natural gas, and coal with carbon capture and storage. However, U.S. oil demand will continue at near current levels until electric vehicles have sufficiently penetrated the overall passenger vehicle fleet, and low-carbon alternatives have been developed for long-haul travel and air transport. In other words, even if one is very bullish about electric vehicles and the ability of the U.S. to generate low-carbon electricity to power them, the country still needs to come up with adequate oil supplies for at least the next 20 years.

In its January 2009 Draft Proposed Program, the U.S. Minerals Management Service (MMS) reported alternative energy and import substitution findings from its Market Simulation Model. The report notes that "according to the research supporting the model, oil lost from OCS production would be replaced by 88 percent greater imports, 4 percent increased onshore production, 3 percent switching to gas, and 5 percent reduced consumption." Based on current oil market dynamics, in the event that the OCS is not opened, incremental imported oil will come from four main sources: Brazil, the Middle East, West Africa, and the Canadian oil sands, in order of increasing climate footprint.

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In addition to the economic and energy security benefits of domestic energy production, it is important to acknowledge the substantial fiscal benefits. Today, the U.S. federal government collects significant royalties from the extraction of oil and gas resources in federal waters. In 2008, the Minerals Revenue Management Service reported $8.3 billion in offshore royalty receipts plus an additional $9.7 billion in lease rents and bonuses associated with bids.

While estimates vary widely depending on assumptions, expanding access to the OCS areas currently off-limits should significantly increase government revenue from royalties. One recent study, which assumed full access to all OCS waters by 2012, estimated cumulative increased royalties at $41 billion through 2025. Another study, carried out by ICF International, estimated lifecycle government revenue of over $300 billion for opening the full OCS.

* * *

In closing, SAFE and the Council believe that by leveraging technology and smart public policy, the U.S. can produce more domestic oil and gas in the coming decades in an environmentally sensible manner. At the same time, we are acutely aware of the limitations of a strict supply-side approach to energy security. We believe that increased domestic production must only be viewed as a tactical component of a long-term strategy to aggressively move away from our reliance on petroleum.

We cannot continue to react to events as they happen, risking our economy every time an insurgent attacks a pipeline or a hurricane threatens the Gulf. Continued delay carries unacceptable risks. I believe that we are at a unique moment, where the recent run-up and collapse of the price of oil, and its consequences for consumers, the automakers and the economy, has left Americans thirsty for bold and transformative policies to address our addiction to oil. We must take advantage of this moment in time and act together while this priority remains prominent in our collective consciousness.

Our challenges are great, but so are our opportunities. It is time for America to act.

Ms. BORDALLO. Thank you very much, Mr. Diamond, for your testimony.

I will now recognize Members for any questions they may wish to ask, alternating between the Majority and the Minority, and allowing five minutes for each Member. And we will recognize the Members in the order of their arrival.

I will begin with, I have a question for Dr. Kitsos and Secretary Bowles.

For any revenues that we might be able to get into a dedicated ocean trust fund, do you believe that a portion should be dedicated to improving the planning and assessment process that we have been talking about this morning?

And in the case of money that might be allocated to coastal states, do you think there should be a nexus with coastal management and planning as well?

We will begin with you, Secretary.

Mr. BOWLES. Thanks for the question. Briefly, Madame Chairwoman, I say yes to both. I think that what you have in NOAA right now is an agency that focuses on fisheries management, it focuses on the CZMs and a variety of other things, but there is not, in my judgment, enough of a unified kind of planning, collaborating with state type of functions. So I think that would be a useful thing.

I certainly think states, the CZMs around the Nation are kind of chronically invariably underfunded. So I think having some specialized funds that would be for this purpose of getting good plans that are consistent with state goals and engage the Federal government I think would be very useful, indeed.

Ms. BORDALLO. Dr. Kitsos?

Mr. KITSOS. I would just like to echo what the Secretary said. The important point in developing a policy and legislation in allocating the money among the states is a section that has been called 'eligible uses.' And I think that in the eligible uses for the allocation of money to each state, coastal zone management and planning purposes, adaptation to climate change, and a broad range of activities that you indicated, Madame Chairwoman, should be eligible, and should be funded by these grants. Yes.

Ms. BORDALLO. Thank you. Thank you very much, Doctor. And I hope when you mentioned states, that includes the Territories, as well.

Mr. KITSOS. Absolutely. The states are coastal states, entities under the CZMA, and they should be deemed that for purposes of money.

Ms. BORDALLO. Thank you, thank you. Now, certainly more knowledge will be needed in order to cite energy projects with the least environmental impact. What kind of info do we need in that respect? Secretary?

Mr. BOWLES. A terrific question. I think that, you know, we have such a paucity of projects in terms of the offshore wind area that we are, you know, just learning. We can import a lot of that information from Europe. I think that sharing of the information, such as Mr. Diamond suggested, around other states is a good one.

And you know, one other point I would just make, and it is sort of somewhat related to your question, is the, as you think about the alternative energy development process, MMS has a very regimented approach to dealing with offshore, you know, drilling. And one of the issues in the rule, in our view from Massachusetts, is it wasn't particularly well-suited to the needs of developing offshore renewables, in the sense that it required a multilayered approach to it that wasn't necessarily tailored.

So I don't know if that gives a perfect answer to your question, but a few thoughts. Thank you.

Ms. BORDALLO. Thank you, Mr. Secretary. And now I would like to—oh, I have one more question here.

Professor Eagle, you mentioned that there will be initial planning phase in a comprehensive marine planning process? How com-

pact are you talking about? Or how is this compact that you are talking about? A few months? A few years? Many years? How do you respond to these that would argue this kind of planning is simply an excuse to delay energy development?

Mr. EAGLE. Thank you, Madame Chairwoman. I am not sure what the time requirements would be. One variable would be whether the Congress decided to move forward in planning and zoning for the entire Outer Continental Shelf, or rather address the issue on a region-by-region basis. Those would lead to different timeframes.

I think that, in fairness, that whether you go with an upfront planning period, or whether you go on an ad hoc basis, there is going to be time involved in processing. And we see, it is unlikely that we will ever see a situation where, say, lease sales or other types of development activities go forward without a public process.

So the question is really not how can we avoid process, but what is the best type and most efficient kind of process. And I think that the upfront planning process is that.

Ms. BORDALLO. Thank you, thank you very much.

And now I recognize the Ranking Member from South Carolina, Mr. Brown.

Mr. BROWN. Thank you, Madame Chairwoman. My first question would be to Dr. Kitsos.

Dr. Kitsos, as someone who served on the House Merchant Marine and Fisheries Committee, the U.S. Commission on Ocean Policy and the Joint Ocean Commission Initiative, you have worked on the Federal OCS oil and gas lease program for over 30 years.

Would you describe the program as environmentally safe?

Mr. KITSOS. Mr. Brown, I also worked at MMS for a while, so I have some hands-on experience with the program directly. The Minerals Management Service runs a very effective and environmentally sound offshore oil and gas program.

I think over the years, certainly since the unpleasantness in Santa Barbara in the late sixties, there has been tremendous advances in technology and in regulation.

Is it a perfect system? No. I am not sure that that is ever possible. But I do believe that the record of offshore oil and gas development in the United States is a sound one. And we have heard statistics from Mr. Diamond, and you have quoted in your opening statements other data indicating that, in fact, the operation is sound and getting better all the time.

I am a little concerned about some of the aging infrastructure in some areas of the OCS which I think need to be updated. And there are always risks every time you go in for drilling.

But the real concern I think is onshore. And you change ways of life for certain frontier areas that are politically difficult to deal with. But on balance, I think it has been a very sound program, sir.

Mr. BROWN. Are you talking about onshore, are you talking about the refineries?

Mr. KITSOS. Well, yes, I am talking about the utilization of space. I am talking about areas that heretofore have been tourist areas, and now suddenly they might be faced with the prospect of leasing.

There are issues in the Arctic environment that needed to be addressed. Areas that have not had oil and gas leasing.

If you set aside the Gulf of Mexico, which has been used to this, there are other areas where the very idea of the possible industrialization of their coast is one that generates some concern.

When I was working up here, I worked for Congressman Walter Jones of North Carolina when he chaired the Merchant Marine Committee, the father of the current Congressman. And there were proposals to go off North Carolina. It had never been done before, and suddenly there emerged a very strong opposition to some exploration plans that Exxon and Marathon were offering.

You just never know where that, the onshore community will say we do not want a change, the change in the way we run our businesses and the way we conduct our fishing operations, and a variety of other commercial activities. Those are some of the difficult issues dealing with OCS.

The offshore matters are important, and oil spills are very important. And on this Exxon Valdez anniversary we need to recognize that. But I think that you take the whole package, and it is a controversial program.

Mr. BROWN. Let me ask you a followup question on that, if I might. I noted we have a history in the Gulf of, you know, extracting resources from there.

How does it impact the, well, the ocean population, like the fisheries and the shrimp, and the other, other fisheries there? Is it a negative impact? Have you seen any change, or——

Mr. KITSOS. The Gulf of Mexico coastal environment, the fisheries, commercial and sports fishermen, the marine scientific community, the tourist industry, all grew up 50 years ago with the emergence of the offshore oil and gas industry. And there was a certain kind of slow and compatible allegiance between these industries, in which they have learned to live with each other. And in fact, the fishing community will tell you generally that they have thrived with the offshore industry, because they have been able to work, to work together.

The coastal economies of the Gulf of Mexico states west of Florida are used to this activity, and there is a compatibility through various uses that have generated some ability to work with each other.

That is not necessarily what we are seeing in other frontier areas, as the moratoria is lifted and discussions occur regarding moving elsewhere.

Mr. BROWN. I know the gentleman from California alluded that, you know, we are becoming more and more dependent on foreign sources. And to the extent that now we have 70 percent of our energy is being imported from some other countries.

We had, I guess, the oil companies in the other day sitting at the same table where you are. And the question I posed to them are, you know, how are you extracting new energy from those countries. Are you extracting it from offshore? And I said well, let me see if I can make a distinction, because, so we are all on the same planet. If it comes from offshore from that country, it is in the same ocean that we deal with every day, too. What difference would it make

if it was in that country or our country? Why would our country's boundaries be sacred?

Mr. KITSOS. Well, our country is now currently open to offshore leasing almost everywhere, except certain areas off of Florida.

I think if you look at the global oceans, each country has its own set of laws and its own unique economic and political constraints.

I did note that the companies that came to testify before you, and that the, I think it was the person from the General Accountability Office, indicated that the United States, notwithstanding a variety of concerns that you and I have just talked about, is still a very friendly environment for oil and gas companies. And they like to work here. They like the general level of predictability in our regulatory system, and, under the Outer Continental Shelf Lands Act.

There are a variety of political considerations and concerns, but those are generally outside the statutory law, and are really related to the local communities and to the multiple-use problems. But each nation has its own unique kind of operations.

We have not done as good a job, I think, in terms of our collection of royalties as perhaps others have. But that is a problem that is being worked on.

Mr. BROWN. I think that is something we need to address, too. I think it ought to enhance those communities, certainly within that environmental region that is impacted.

Mr. COSTA. Excuse me. We need to be mindful of others' time here.

Mr. BROWN. Oh, I apologize. I was waiting for the Chairwoman to give me a knock.

[Laughter.]

Mr. COSTA. No, no. You took your chance, and——

Mr. BROWN. I didn't hear you knocking. Thank you, gentlemen.

Mr. COSTA. Well, OK. Thank the gentleman from South Carolina.

Mr. BROWN. I got carried away.

Mr. COSTA. We will just deduct that off your next round.

Gentlemen, you have talked, three of you, about the—well, first of all, let me just take off on the response on the last question, doing any sort of comparative analogy on the sort of safety factor for OCS activities in the United States, Dr. Kitsos's comparative analogy to other, in Europe and other parts of the world.

How would you compare our safety factor and protection for the oceans?

Mr. KITSOS. I think that our safety, our safety regulations are among the best in the world. The technology for offshore oil and gas industry, however, is pretty global. The kind of technology that they used in the North Sea or off of Africa is very similar to the technology used in the United States.

I think the stringency of MMS regulations and safety inspections is pretty sound, and perhaps not quite as well enforced in other nations. But I am really speaking off the top of my head on that.

The improvement in the safety record of offshore industry in the United States has been steady and linear. That is not to say there are not risks, however.

Mr. COSTA. All right. Before my time expires, let me move on.

The three of you indicated about the importance of planning and developing an overall comprehensive planning process. However,

what, I think you didn't—I mean, I can understand logically why that would make sense.

But what are going to be the difficulties? We have multiple states. We have multiple jurisdictions. We have the balancing act that is always a source of conflict.

So what is the process to develop this, this planning effort from three to 200 miles off the coasts of the United States? Who wants to start first?

Mr. BOWLES. Shall I go?

Mr. COSTA. Yes, quickly.

Mr. BOWLES. A couple thoughts. I think we have big data gaps, just to be clear about that, about habitat uses, conflicts, fisheries, the location of infrastructure. I mean, just in our own state waters, we have a remarkable diversity of——

Mr. COSTA. Certainly, and around the country.

Mr. BOWLES. Right.

Mr. COSTA. But I mean it would take the Federal government, in essence, to bring the states together, and all the multiple jurisdictions, would it not?

Mr. BOWLES. I think so. I mean, I think that is part of my answer before, is that NOAA doesn't do this for a living. And having some——

Mr. COSTA. Well, nobody does it, right?

Mr. BOWLES. Yes. And I think it would be very——

Mr. COSTA. It has to be created.

Mr. BOWLES. I agree. And I think it can be done in a way that planning doesn't lead to obstruction. To be clear about our process, we have 18 months, and there will be some sites and——

Mr. COSTA. Mr. Eagle, do you want to respond? How long do you think this should take, this planning process? And who should do it?

Mr. EAGLE. Well, as I said before, I am not sure of the exact amount of time. It depends whether we took a regional or a national approach. But you know, somewhere in the neighborhood of a few years.

One good analogy would be the process that was used to do planning and zoning for the Great Barrier Reef in Australia, which is an enormous area. In that case, I believe Parliament asked the Great Barrier Reef Authority to create a planning, to plan and zone the entire reef area. And they returned with a plan within two years, which was then approved by the Australian Parliament.

Mr. COSTA. Do you think we could do it within two years, if the Aussies can do it within two years?

Mr. EAGLE. Perhaps. I don't want to put money on that one.

Mr. COSTA. Dr. Kitsos?

Mr. KITSOS. The reason I focused much of my oral statement on an ocean advisor to the President and strengthening the Committee on Ocean Policy——

Mr. COSTA. No, I think that was a good suggestion.

Mr. KITSOS.—in the Executive Office of the President, is that is the institution, in my judgment, that should have responsibility for this coordinated——

Mr. COSTA. For putting this process together.

Mr. KITSOS. To bring all of these agencies together. Because only the White House can do that.

Mr. COSTA. Mr. Diamond.

Mr. DIAMOND. So I would recommend potentially looking at these areas. Areas with infrastructure probably can move quicker. There are places without geological surveying, where if you want to move like Virginia, that might be a different process. But very sensitive areas, off the coast of California, for example.

Maybe we could look at a test project to see, and try to do it the way they do it in Norway. I mean, it is a little bit of a cat-and-mouse game in the United States, where of course the Norwegian oil company is mostly owned by the government, it is very collegial. And there is no reason why we couldn't come up with, instead of just looking at the amount of money we are going to make for the leases, but also look at the environmental goals.

And so create two task forces, one government and one community; come up with the way they would like to see the project developed; and have the companies then bid based on technology, as opposed to bidding based on price.

Mr. COSTA. Is this planning process by a person, advisor, science advisor to the President, is the way to proceed with this?

Mr. DIAMOND. I mean, it certainly——

Mr. COSTA. Just yes or no.

Mr. DIAMOND. I think that is probably the way to go.

Mr. COSTA. OK, final question. Professor Eagle, do you think the Congressional or Presidential moratorium on offshore drilling has been a help or a hindrance in this effort to do this planning? It has been lifted now.

Mr. EAGLE. Right. I mean, well, obviously during the moratorium there was no effort, or there was no foreseeable activity, so there was no planning going on. I think actually lifting the moratorium provides a great opportunity to take a look at the resources that we have out there, and to conduct a rational planning process for using them.

Mr. COSTA. Thank you very much. My time has expired.

Ms. BORDALLO. I thank the gentleman. I would like now to, first before we recognize the next Member, would those standing in the back—there are a few chairs up here. All right. Please feel free to sit on the lower level here, OK?

All right. And I at this time would like to recognize Mr. Gohmert, the gentleman from Texas.

Mr. GOHMERT. Madame Chair, the former Chairman of the committee had asked—his time was short. He could be recognized at this time, and I don't have a problem doing that.

Ms. BORDALLO. No objection.

Mr. GOHMERT. He is going to bring me a salmon.

Ms. BORDALLO. No objection. I now recognize Mr. Young.

Mr. YOUNG. He is going to get a White King salmon. Thank you, Madame Chairman. And I appreciate the testimony from the witnesses, and the future panel, too.

My big concern is it is the day of the Exxon Valdez tragedy—not disaster, tragedy. And I want to stress that, because in the aspect of oil in our waters, American waters—and I know I have talked to a captain that is going to be on the next panel—I have figures

that show that of petroleum transportation, 4 percent contribute to the pollution of our waters.

Drilling, extraction, and delivery other than by tanker is 1 percent in our waters. Cars, fishing boats, pleasure boats, another 32 percent.

What I am leading up to is we are talking about whether we do or whether we don't drill. So the biggest polluter we have is Mother Nature itself. Sixty-three percent of the oil that goes in our water comes from nature, seeps that go into the water. And I haven't seen, I hope we are not thinking about capping Mother Nature. I mean, it may be a good stimulus package, by the way; it would put a lot of people to work.

But I would urge that whatever comes out of these hearings, whatever we do, we understand the necessity of fossil fuel. The necessity of fossil fuel. That is something we have to understand.

Mr. Brown mentioned that we imported this year actually 13 million barrels of oil a day. We actually import a total amount of 4 billion barrels, very near 5 billion barrels from overseas. That is $453 billion we send overseas. We can't continue to do that.

And unfortunately, those that oppose drilling or exploratory of offshore also oppose drilling and exploratory onshore, in every area of the United States. Even where the states want to do that.

And we can't continue to put our heads in the sand, when we are a nation of fossil fuels.

If you think about it for a moment, the new 787. The reason it is going to be so efficient and will contribute to climate change is the fact it uses, some 50 percent of that plane is composites made from fossil fuels. Fertilizers for our crops feeding the nations in the world, made from fossil fuels. Natural gas and oil.

Automobiles. You think about everything in that automobile now today is made from fossil fuels. The tires, the navigation instruments. Most of the, other than the engine, it is all made from fossil fuels.

And so what I am concerned about, Madame Chairman, we go through the series of hearings; we have to start thinking about this nation for the future of it, including fossil fuels and all those other components that will contribute power.

Your windmills, I hear a lot about wind. Those propellers are being made from fossil fuels. And I can go on down, and go on and on about the amount of products made from fossil fuels, and I won't do it, as my time is running out.

But keep in mind, parts of the barrel, of the barrel that is made of 42 gallons of oil, there is actually, of that 42 gallons a barrel, 19 gallons are gasoline. There are eight, nine gallons of diesel; there are three gallons of jet fuel; there is one, two gallons of heating oil. And then 24 percent of the barrel, 11 gallons, are the other things that you use every day.

If I was to remove everything in this room that was made by fossil fuels, you would all be in pretty sad shape.

You think about it. I mean, it goes from your eyeglasses to medicines. One of the things that always tickles me, the Pampers. And I would like to eliminate Pampers. For these young ladies who may have a baby in the future, you think about it a moment. These

glasses, get rid of them. I don't like them, get rid of this, too. But I can go on down the line.

When we finally come together as a Congress and say yes, we want to address this power issue, this energy dependency, but you are not going to do it unless we consider the fact we must have a percentage of fossil fuels that are domestically produced. And when that day happens, with all the other added to it, we will have a nation that is independent from foreign oil. And that is what I seek to do.

But think about that when you have these hearings. Let us not get caught in this trap of Dr. No. Because I will hear people say we don't want it in ANWR, we don't want shore-drilling in Colorado, we don't want any onshore drilling anyplace in the United States. And yet you have to have fossil fuels, or we cannot exist.

And I thank the gentleman for allowing me to go ahead. And thank you, Madame Chairman, I appreciate it.

Ms. BORDALLO. I thank the gentleman from Alaska, Mr. Young, for his insightful comments.

And now I would like to recognize Mr. Inslee from the State of Washington.

Mr. INSLEE. Thank you. The gentleman from Alaska made some comments about a little company in my district, Boeing, and the Boeing 787.

A couple things I want to note about that plane. It may be burning biofuel some day. It is a possibility. Boeing is looking at——

Mr. YOUNG. That will be a warm day in Alaska.

Mr. INSLEE. We may even grow some of it in Alaska. I don't know, that might be possible.

The point is, looking at the development of biofuels, as are quite a number of other companies and entities, including the U.S. Air Force, there is another company in my district—they are actually one of the leaders in my district—called Sapphire Energy, which is growing an algae-based biofuel, which is chemically, can be chemically indistinguishable from ATSM-certified gasoline. So we do have some prospects involving the nonfossil fuels transportation.

I want to turn to a discussion of one of those, and that is offshore wind. We have an enormous potential that has not been explored adequately.

I want to ask the panel about the permitting situation on offshore wind. Just last week the Department of the Interior announced a memorandum of understanding with the Mineral Management Service regarding how we should move forward in permitting this system.

And the question I have is, for any of the panelists, is that adequate, or do we need a statutory fix to some of the ambiguity there is in the sighting of offshore wind? Do any of you have any thoughts in that regard?

Mr. BOWLES. Thank you, Congressman. Let me comment on a couple ways.

I think it may be too early to say, because we haven't seen the final rule, whether or not there is a need for some statutory change. I think that Secretary Salazar deserves the credit for the enthusiasm with which he is tackling renewables, and we are opti-

mistic that the final rule will be something that states like ours can work with.

I think one of the things we are learning in our ocean planning process in our state is the need for summary alignment from NOAA and some of the other agencies to work closely with us, as we go through a deep 18-month data-driven exercise to come out the other end. And then have to start at the beginning of a Federal review process for something that we just reviewed for 18 months doesn't make a lot of sense.

So driving back kind of coordination together makes sense.

Offshore wind also needs to be under the Department of Energy R and D investment agenda. Right now, you know, their estimate from DOE was hundreds of thousands of megawatts of potential. But as you go further into deep water, you know, those still need to be commercialized. So it needs to be a part of the agenda.

And then finally, this FERC, in terms of the planning of what would a transmission spine look like for the Eastern Seaboard interconnection, the three different control areas, and all the engineering and analysis needs to be done. I think that is not on the radar screen, to my mind, for FERC in the way that it needs to be.

So I think there are some things. I am not sure whether it needs to be a big statutory change yet.

Mr. INSLEE. Thank you. I want to ask about the Arctic specifically now, as far as our offshore drilling. One of the results of global warming is the Arctic is disappearing. There has been unprecedented melting that really stunned the scientific community. We knew it was in long-term decline, but the last two or three years have had the spectacular reductions in sea ice, summer sea ice.

That has people salivating at the prospects of opening up the Arctic for mineral and oil exploration. And I can understand that ambition, but it is a little disturbing to me to think that we burn oil that destroys the Arctic; that opens up more area for us to drill oil, which means we burn more oil, and that melts more of the Arctic, and then we drill more oil. It just doesn't sound like a real virtuous cycle that we are in.

Seventy members joined myself and others in writing a letter to the Administration urging them to take a precautionary approach to drilling in the northern waters as a result of that, particularly because of our lack of any technology to deal with these spills in these very, very challenging climates.

We know how tough it was in the Exxon Valdez, where we still have declining herring stocks there after 20 years. Imagine what it would be like up even farther north.

So I guess I would just ask for any of the panelists to comment on the question—should we have an additionally precautionary approach in the far north before we allow drilling as the Arctic melts?

Mr. EAGLE. I don't have a specific answer to that question. But I it ties into an important point that I think is being missed, which is, you know, it is a little bit of a red herring to talk about the safety of offshore oil as an industry.

The question is, and this is why planning is so important, you know, what is the safest place to do it? That is where you would start.

In other words, if you were going to say, well, nuclear energy is safe, that might be true. But the first place you would install a nuclear energy facility wouldn't be next to a nursery school, right? You might think that's a bad idea, even though it's relatively safe.

And so I think the same process needs to be gone through with respect to drilling, and this would apply to the Arctic, as well. Let us start with an assessment of where the most environmentally sensitive areas are, where the cheapest places to drill and the safest places to drill are, and start with those places, as opposed to just saying well, the industry is safe wherever it is located.

Mr. INSLEE. Yes?

Mr. DIAMOND. Congressman, I don't disagree with that. I would just note that we should really look at Norway and have a serious discussion with Norway on how they do it.

Norway, as an industry, has a carbon tax. The carbon that they produce from their barrel of oil is 7.1 kilograms. The EU average is 10 kilograms, and the North American average, which of course includes Mexico, is 24 kilograms.

They are an industry and a group that has a very similar climate, our northern climates. And they are able, underwater, to do all this, and have absolutely no surface presence at all. And the reason that they are so advanced is because of all the ice floe.

And so I don't think it is a question of only the melting that matters. I mean, or the Sakhalin project in Russia, similar. So I don't think it is like oh, things are melting, and so we should do it more up there. I think we should look at what is up there today. We should look at other countries and what they are doing, and see if there is a technological approach based on the environmental standards that we want as a country, and the local communities want. And can it be done or not.

Mr. INSLEE. Thank you.

Ms. BORDALLO. I thank the gentleman from Washington.

I would now like to recognize the gentleman from Texas, Mr. Gohmert.

Mr. GOHMERT. Thank you, Madame Chair. It was interesting hearing about the Arctic melting, because I don't know if everybody has gotten the memo, we are supposed to quit saying "global warming" and talk about climate change. That way, if we are making a lot of money from contributions from people that want us to fight global warming, and it turns out the planet is actually cooling, then we can still keep the contributions coming in, because now we are going to fight climate change and the fact that maybe it is cooling.

And that instead of, one article I read said maybe we were wrong that it is not carbon gases that is holding the heat in; maybe the sun is hitting the carbon gases, and it is bouncing off. That way you can keep the contributions coming, and we will save the planet whether it is cooling or warming, either one.

But with regard to oil spills, you know, it has been 20 years since that horrible, as my friend from Alaska said, tragedy. There are a lot of things, I think, to be very pleased about in the succeeding 20 years.

For one thing, for example, the Hurricane Katrina hit platforms off the Louisiana coast at a level 5. It wasn't like 3 when it hit the shores. We didn't have any oil spills.

Now, our friend, Ted Danson, that I love from television, he had talked about we have to prevent all the killing off of the jobs of two million fishermen around the world. But when we pressed the issue, it turns out all platforms increase fishing. It increases fishing; fish proliferate.

As we have seen along the Texas coast, as the platforms have gone out there, despite what naysayers said for so long when I was growing up. Now you want to fish, you are better off going near a platform; they make great artificial reefs.

Also, there was no leakage that came from any of those platforms, even though some of them were totaled.

So in 20 years we haven't had an oil spill. I don't like tankers running around full of oil. That is a problem about to happen, especially if you have a lot of windmills they might collide with out there in the water.

But there is a pipeline to Alaska. As I understand, it is about 70 miles or so from where ANWR would be drilled. So that could help prevent further tanker disasters or tragedies.

Secretary Bowles, you discussed the wind energy, so I take it that you are 100 percent in favor of the windmills off Cape Cod coast. So I am glad to hear you plug those like that, correct? You fully support the Cape Cod windmills, right?

Mr. BOWLES. Gov. Patrick has supported that project, and it is in the permitting process in the Commonwealth right now.

Mr. GOHMERT. OK. And you personally do, correct?

Mr. BOWLES. Well, I actually haven't had a personal opinion on it, Congressman, because it has been before me as a regulatory matter for the environmental review. And I chair the siting board that is reviewing its permits.

Mr. GOHMERT. Well, wait a minute. If you are going to come up here and take our time testifying about how great windmills are, then all you need to tell me is you don't have an opinion on having them off your own coast, then I think you answer my question.

Mr. BOWLES. Let me just be clear. I said that Gov. Patrick——

Mr. GOHMERT. I know, you are speaking for the Governor. I asked you a personal question; you didn't have an answer personally. You said you didn't have an opinion personally, is that correct?

Mr. BOWLES. Well, let me clarify, to say that the matter is before me as a regulator. And so it is not appropriate——

Mr. GOHMERT. The question is, do you have an opinion or not?

Mr. BOWLES. I don't have a personal opinion——

Mr. GOHMERT. That is all I needed to know. You answered the question. Thank you very much.

Mr. BOWLES.—my regulatory job.

Mr. GOHMERT. As I understand it, though, Massachusetts does not produce any significant energy at this point. And I am sorry, we are limited to five minutes. That is all I get, and so I need direct answers.

Secretary Salazar recently announced that it was a midnight leasing by the Bush Administration of shale, in Wyoming, Utah,

Colorado. And so he suspended them, and then refused to allow the leases to go forward. Everybody needs to know that was completely disingenuous. We heard in this committee that had been a seven-year process that he nailed the last nail in the coffin, and prevented us from having oil and gas.

At some point, we have to get realistic about our needs. I met with some Chinese. They said we know what you are doing. These people were brilliant. They said, you know, we think long term in China, and we realize America would not be so stupid as to keep putting your own resources off limits for no reason. We know what you are doing. You are going to let everybody else use up their resources, and then you will be the only one with these resources, and then you will be the true superpower.

And I had to admit, I wish we had been that far-thinking. Actually, we are just cutting off our nose to spite our face, apparently.

But with regard to this zoning issue, I am concerned about that. And I see my time is up. But if I could just find, is it really a good idea to zone before we really know where all the oil and gas is?

Mr. EAGLE. Well, that is a good question. I think that the idea would be that part of the planning process would be to gather as much existing information as we could.

In addition, you ought to be very careful to build flexibility into the zoning process. In other words, it wouldn't be set in stone. And while there is, you do want some certainty in there in order to promote investment and development, you are going to have some flexibility built in. And certainly Congress could always come back and change the plan.

Mr. GOHMERT. So you support a comprehensive inventory.

Mr. EAGLE. Correct.

Mr. GOHMERT. OK, thank you.

Ms. BORDALLO. I thank the gentleman from Texas. And now I would like to recognize the gentleman from Hawaii, Mr. Abercrombie.

Mr. ABERCROMBIE. Thank you, Madame Chair.

Mr. Diamond, are you familiar with the bill that Mr. Brown and Mr. Costa, I, and others, on a nonpartisan, I want to say nonpartisan basis, put together, H.R. 6709 last year on offshore development.

Mr. DIAMOND. I am aware of your initial bill with Peterson——

Mr. ABERCROMBIE. With Peterson, yes. The variation on that that we—in other words, you are familiar. Maybe some of the others are, as well.

Mr. DIAMOND. Right.

Mr. ABERCROMBIE. This goes to what some of the others were talking about.

To the degree you are familiar with it, that is the vehicle. We are putting another bill together. We cannot wait. This is not a partisan issue, we simply cannot wait.

I have been in discussions with the Consul General of Norway. I am very familiar with it, because they want to use Hawaii—I shouldn't say they want to use Hawaii. But they see Hawaii as a template, as an experimental venue, if you will, for so many of these alternative energy transitions.

We can't get there. And part of the reason that Norway sees us that way is because they have been using their carbon-based fuel resources to maximum efficiency. Would you agree with that?

Mr. DIAMOND. Yes. Norway is a country that sees both the short term and the long term.

Mr. ABERCROMBIE. Combining it. And the short-term bridge, if you will, to an alternative energy future, their carbon-based resources, right?

Mr. DIAMOND. Absolutely. It supports their largest exports, almost 60 percent of their exports.

Mr. ABERCROMBIE. Now, would you also agree that China is now in the process of trying to buy every mineral resource that it can in the world, corner it one way or another diplomatically, contractually, any other way that it can do it?

Mr. DIAMOND. I don't know if I would say every one, but certainly they are on the hunt to maximize their ability to get resources around the world. Certainly in countries that we won't operate in, and they are taking advantage of that.

Mr. ABERCROMBIE. In Africa?

Mr. DIAMOND. Yes.

Mr. ABERCROMBIE. Yes. While we have a military command, they are out there cornering the resources. While we are out there trying to figure out how we are supposed to insert ourselves militarily in the Niger Delta, and come up with some more nation-building or whatever it is that we are doing around the world these days, China is in there trying to make sure no matter who ends up running the Niger Delta, that they get the oil out of it. Is that correct?

Mr. DIAMOND. The Niger Delta has some western companies. They have focused on Sudan and some of the other countries. I mean, in the Niger Delta there are a lot of Shell Oil operates and some European companies. So I mean, the U.S. Government doesn't produce oil, but some of our western companies——

Mr. ABERCROMBIE. But that is a foreign oil situation for us, then, right?

Mr. DIAMOND. Certainly it is one of our biggest—our biggest, our second- or third- or fourth-largest producer of oil for the United States is in Nigeria.

Mr. ABERCROMBIE. In Nigeria, which is now experiencing what amounts to civil war. So we are dependent on an oil resource in which the only way we can apparently secure the oil is to try to possibly involve ourselves in another war, over oil, because we are not producing it domestically. Right?

Mr. DIAMOND. There is no doubt that our, the United States is essentially I would say Hessians for free. We protect the global oil supply for the entire world, not just for ourselves. And it is not good, and our allies need to step up and do the same thing.

Mr. ABERCROMBIE. Good luck.

Mr. DIAMOND. And while we are dependent on a vulnerable resource from countries that don't like us and unstable places, our military will definitely be part of the process.

Mr. ABERCROMBIE. Yes. So we are investing in the military, in military adventurism of one kind or another, with dubious prospects; and at the same time then, we are involved in endless plan-

ning or endless preliminaries, endless prefaces with regard to domestic carbon-based resource explanation and extraction.

When we talk about planning, I think what we really need to do is get toward what kind of an inventory do we have. Would you gentlemen agree that we don't really have a good idea at the present time as to what resources exist with regard to natural gas and oil possibilities offshore, right now? That we need to do, if you will, a crash program? And anybody can answer who thinks they might.

Mr. DIAMOND. I will just do it quickly. That is absolutely true. We haven't done a real inventory in over 30 years in many parts of the Outer Continental Shelf. And when they do start producing or do a modern-day inventory, they find much more than we ever thought was there.

Mr. ABERCROMBIE. OK. So I think we need to make the decision first. I can assure, Madame Chair, I can assure you that there is going to be a bill coming forward that is going to have equal number of Democrats and Republicans on it, that is going to address this question of whether or not we are going to have energy independence in this country with respect to carbon-based fuel, so we can get to some of these other alternative energy things.

If we don't do it, then we are going to end up as we are right now, as I have just indicated, in places like the Niger Delta and God knows where else that nobody in the rest of the country, and the cable shows and everything else isn't focusing on. But they will be. Because we don't have our own resources. This is something that has to get beyond these ideological constructs that we have developed in here, and these ex cathedra pronouncements made.

For example, about how much oil or natural gas is out there in the Outer Continental Shelf, and we don't really know right now. And if we are going to make that investment, we have to do it.

I appreciate the time. I appreciate this panel. All of the testimony in here is excellent and very helpful to us. Thank you.

Ms. BORDALLO. Thank the gentleman from Hawaii, Mr. Abercrombie.

And now I would like to recognize the gentleman from Louisiana, Mr. Cassidy.

Mr. CASSIDY. Mr. Abercrombie, I enjoyed your comments. Thank you.

Mr. Bowles, it almost seems like you presupposed—now, let us assume for the sake of argument that Mr. Abercrombie is right, and maybe we do a reassessment, there is oil and gas off the coast of Massachusetts.

But from your testimony, it almost presupposes that you know that there will be damage to the fisheries if you allow that exploration. Is that true?

Mr. BOWLES. Well, I think the point of my testimony is that we have an economic resource we use in our region that is of vital importance, and is ecologically sensitive. And we need a particularly high bar if we are going to——

Mr. CASSIDY. Now, I may interrupt, because I gathered that. And you are not from Louisiana, and I think we have the most productive fisheries in the lower 48. And Mr. Kitsos has also pointed out

that the fisheries, I think his term was thrived, even though there has been oil and gas production in the western Gulf of Mexico.

So it almost seems like your priori assumption is that it is going to damage—you have to set the bar high, is not based on, it is almost based upon—I hate to use, it sounds too strong, but—superstition, as opposed to what the most relevant facts are.

Mr. BOWLES. Well, I would say first and foremost, we are science-based here in the Commonwealth of Massachusetts. And I think the case needs to be made. I would also point out it is a big ocean. We have a particular area, George's Bank, that is of vital concern to our fishing industry. And so when you look at the broad swath of the East Coast, you are not hearing from the Commonwealth of Massachusetts, don't look at anything at all. I think what you are hearing is, pay particular attention and concern to this one small area that we know is economically important for competing use.

Mr. CASSIDY. Now—and thank you, by the way. I hope I didn't seem rude, I apologize.

Mr. Eagle, now, the thing that concerns me about a kind of process where everybody comes in, because although Mr. Bowles speaks that it's science-based, again, the most productive fishers in the lower 48, I think everybody will want to say that, is off the coast of Louisiana.

And so it almost seems that the final product will be based upon assumptions, some of which are unknown. I am not even sure we know our unknowns, to quote somebody else.

And so that said, I hate to be kind of fatalistic about the process, and I think about the Great Barrier Reef with much of that oil and gas down there, which seems to elicit a particular emotional response.

Your thoughts on that? I guess my question is, it seems as if it is not necessarily science guiding this, as much as it is no, we don't want it.

Mr. EAGLE. Right. I think both are true. In other words you do want, if you are going to do rational management, you do want the best available scientific information of the assessment of the resources and so forth, so that you can make logical planning decisions.

At the same time, it is going to be true that the public, as owners of the resource, the American people as owners of the resource, may, do vary, as to what they want to see done with those resources.

Mr. CASSIDY. Now, I will say what Senator Johnson once said, no one likes change, even when it is from worse to better. And so we had a fellow from Florida who was speaking about how he didn't want to have sand on his beach from an exploration off the coast of Florida. And I pointed out there is ongoing, right now, exploration off the coast of Florida, and he said we still don't want it. Even though the best scientific evidence was that the production there is not polluting his beach.

So again, going back to it, I am not convinced that Mr. Bowles has convinced me that offshore would hurt his fisheries. And yet somehow that would obstruct off the coast of Massachusetts, or off

the coast of Florida. Are you with me? How do you override this sort of prejudice, is what I am asking?

Mr. EAGLE. Well, I think one way would be certainly you want to develop the best information that you can, and communicate that to the public. But I still think that certain people are going to place a high value on things that are hard to value, such as, you know, healthy coral reefs, healthier ecosystems.

Mr. CASSIDY. Then I will say that, because there is also a presumption that offshore oil and gas exploration hurts coral reefs. And yet if you look at the NOAA report, the flower gardens between Florida and Texas are among our healthiest coral reefs. An area of intense oil and gas exploration, with the healthiest coral reefs.

And then off of Florida, where there is none, apparently, I am told they are dying.

So I just say that because it almost seems like there is a prejudice against this process that is not based upon science. And almost, this discussion affirms it for me by your references. Do you see what I am saying?

No offense, but the fact that you would quote healthy coral reefs as an argument against offshore oil and gas, and yet our best scientific evidence is that they co-exist makes me uncomfortable with the reference.

Mr. EAGLE. Right. I don't have an opinion on whether oil and gas development affects coral reefs; I am not an expert on that.

All I was saying is that certain people, members of the public who would have ownership of these resources, might desire that a particular area is used for——

Mr. CASSIDY. I see that, and I don't mean to interrupt.

Mr. EAGLE.—fish and wilderness area.

Mr. CASSIDY. Except my yield light is on, and I have one more question.

Mr. Kitsos—yellow means speed up. Mr. Kitsos, do you think that when you speak about the offshore oil revenue going to maintain the coastline, if in Louisiana we are taking all the hits, so to speak, if hits are to be had, it almost seems unfair to me that we are sharing it with the rest of the coastal states who, for example, blocked this revenue source for coastal restoration by continuing to oppose offshore drilling.

Your thoughts on that?

Mr. KITSOS. Well, you are at the nub of a very difficult issue with respect to the sharing of revenues, and how much do you tie those revenues into where oil and gas leasing and production is. And how much do you share it among all coastal states.

And there is no good answer to that. The Congress will have to make the ultimate decision. I have seen that decision made before.

My sense is that all coastal states should receive funds from a trust fund as their part of offshore revenues, coming from oil and gas and new and emerging uses.

Now, the question is, what kind of use can the states put to that. And in Louisiana's case, in Texas and other states in the Gulf, some of that money may very well want to use to address the impacts from offshore oil. Other states may have other decisions to make, and have other uses for it.

You could use it, some of it, for OCS-related impacts, and some of it for restoration of coastal wetlands, and for a variety of other, other things.

So in the end, if in fact a trust fund is set up, Congressman, this committee and other committees will have to make that hard choice on the relationship between leasing production and the sharing of the revenues among the states. And the commissions that I worked for never made a call on that one way or another.

Ms. BORDALLO. I thank the gentleman. And I would like to now recognize the gentlelady from New Hampshire, the Hon. Carol Shea-Porter.

Ms. SHEA-PORTER. Thank you very much. I have been listening to the conversation here, and I have to say that I had the great joy of living in Louisiana, and I find it a beautiful state full of wonderful people. But they certainly have environmental problems in their petrochemical plants, et cetera.

And the problems are deep, and they are a result of not necessarily one thing, but a number of issues. Because it isn't simply the drilling for it, it is what we do with the product, how we use it.

So to say that we don't have problems from just, say, the actual drilling moment, and then not pay attention to what happens with the product when we transport it. We certainly know Valdez. If we went there today, I think we would still be very, very upset with what we are seeing 20 years later. So this impact is deadly, and we need to pay attention to this, so I am very glad that we are having this hearing.

I also know that these oceans cannot just cleanse themselves, like we used to believe in the past; and that more than half of the world depends on the oceans for their essential protein. And I have said before here that if we think this is a problem now, imagine what it would be like if we had some kind of problem where people couldn't access food. Then we would really, really be in trouble as a population around the world.

And I think that asking the question what if is responsible, and that we have to. Whether you have four engines on an airplane or not, somebody needs to ask what if they didn't work. What if everything went wrong. What is the worst case scenario. That is our responsibility in Congress, to ask that.

And then how do we balance our need for energy—and I don't think anybody here denies the fact that we have to have energy, and we have to use oil, simple as that. But also looking forward, how do we, how do we look into our future and figure out how to reduce our dependence on oil.

So I have a couple of questions. I heard one of my colleagues talk about zoning. And so I wanted to ask you, Mr. Eagle, zoning is more than simply just figuring out where the oil is, and should be. Otherwise we could be putting drilling right downtown Houston or somewhere else that wouldn't make any sense at all. And I think all of us here would agree that wouldn't make sense.

But what criteria should we be using when we are figuring out zoning? What factors besides is oil there?

Mr. EAGLE. Right. Well, I think, as I said, the initial process is an information-gathering and planning process where we deter-

mine, for example, where we determine, for example, where the oil is, what the most environmentally sensitive areas are. Things like how currents move, wildlife pathways, other resources, and think about issues, renewable siting and things like that.

And then what you would want to use is some sort of rational process. We are saying OK, well, let us go ahead and say this area is particularly environmentally sensitive; we should make sure that is as far away as possible from some of these potential impacts—I am not saying certain potential impacts, but there are always risks—as far away as possible from those activities.

So it would be some form of rational process, similar to what we use in designing and laying cities and towns and so forth.

Now, you notice lots of cities and towns are zoned and planned differently, right? They all have a different idea. And I think what is unique about this process would be the Congressionally led effort to figure out what we all want the ocean to look like.

Ms. SHEA-PORTER. OK. And what we have to have. And then the other question that I had was for, about infrastructure, Mr. Bowles. And I wanted to talk about the New England region; I am from New Hampshire. And I know how important George's Bank and that whole fishing area is, the Gulf of Maine, et cetera.

And so, can you tell me if, if we did drill there, how long would it take to create the infrastructure in order to be able to do this? What impact would it have, in your estimation, of reducing our dependency? And would the results come quickly enough to make a significant difference in the debate?

Mr. BOWLES. Well, a couple things. I am not expert on the question of how long it takes to put all this infrastructure in place, and I would defer to my colleagues on the panel.

I would just note for the record a couple things. Massachusetts has just sited and approved two floating buoy LNG berths off of our coast of Gloucester, near our friends in New Hampshire. So there is a lot of infrastructure in the mainstream fossil energy area that is being sited and built in our state, and I don't want to leave the impression for the committee that they are not.

I think the other point to make about energy prices is we commonly say we will drill domestically, and it will reduce prices. That is not the case when you have a global market for energy. So I think you need to look at it more broadly.

And the third point I want to make is just that we societally express a preference in favor of zero-emissions energy. We in New England have done a good job; we are now in balance in terms of renewable electricity. We don't have the shortage that we had for a number of years.

And so I would encourage the committee to put a good amount of attention on what are those things that are coming in the future. But I acknowledge I am not answering your question very well, so I would ask one of my colleagues who are more expert how long it takes to build these things, to answer you more directly.

Ms. SHEA-PORTER. Would anybody like to——

Ms. BORDALLO. To the gentlelady, yes, your time is up.

Ms. SHEA-PORTER. OK, sorry. I yield back. Thank you.

Ms. BORDALLO. Thank you. At this time I would like to introduce the gentleman from Utah, Mr. Chaffetz.

Mr. CHAFFETZ. Yes, well done. Appreciate it, thank you. And I appreciate the gentlemen for being here this afternoon, I really do appreciate it.

My questions initially here are for Mr. Bowles. So you touched on it in this last answer, but do you support the construction of new liquefied natural gas facilities? And if you can expand upon that, I would appreciate it.

Mr. BOWLES. You know, it is hard to answer that in a blanket term. Again, they come before us regulatorily all the time.

We have two new ones that have been built with I think an interesting system off of Gloucester. It is a floating buoy system, so instead of a built infrastructure, essentially this buoy comes up and locks on the bottom of a tanker, which then vaporizes the LNG and puts it into a pipeline. And those have gone through the process in the last two years in Massachusetts, and are off the coast of Gloucester.

So, and we have got——

Mr. CHAFFETZ. Would you site or approve those in the future? Or are those just a carryover from——

Mr. BOWLES. We review every project on the merits.

Mr. CHAFFETZ. But does any of them, do they have a chance of getting through the process? Or is there——

Mr. BOWLES. They are built and operating, and they got approved in the space of two years.

Mr. CHAFFETZ. But I mean in the future. Would there be an opportunity expand that?

Mr. BOWLES. Sure, of course. I mean, our ocean planning process is going through the question about looking at transmission infrastructure, cables, pipes, and all the rest.

And what we are trying to do, Congressman, is put that in the context of other competing uses. Instead of reacting to proposals to build these without an overall plan that says what is the best place to put them, given other uses, habitat values, and all the rest. And that is really the purpose of our planning process.

Mr. CHAFFETZ. Jumping a little bit, but still for Mr. Bowles. How much oil and lubricants will be discharged annually by the Cape Wind project when it is operating?

Mr. BOWLES. That is a terrific question. I do not have a numeric answer for you, Congressman.

I will say that in the environmental review that we approved and I approved, moving that process into permitting, that I think the number used about automobiles displaced—do you remember what the number was? What is that? A hundred and seventy-five thousand cars taken off the road, as a rough analysis. I don't have an answer for you on the lubricant question. I apologize for that.

Mr. CHAFFETZ. And a question about the, in its best-case scenario, what percentage will wind actually supply? The energy supply that you need in Massachusetts, what percentage will come from wind? In its best-case scenario.

Mr. BOWLES. Well, Gov. Patrick set a 2020 goal of 2,000 megawatts of wind for our state, which would be an average between about 10 percent and 15 percent, depending on what the peak value is. We think a lot of that is going to come from offshore.

And you know, I would say again the point I was making before, that we have done very well in New England in terms of siting new renewable generation in our state, to the point where we now actually have a surplus compared to our state. We are notable portfolio standard requirement.

Mr. CHAFFETZ. And in siting these, the wind projects, I notice you cite a number of different factors that go into this. What about aesthetics? Does aesthetics play a key role in your decisionmaking process about the siting?

Mr. BOWLES. Aesthetics is really a question for the beholder, as I am sure you know.

Mr. CHAFFETZ. But what about the regulatory agency? Do you believe it has a role in that?

Mr. BOWLES. Well, I mean, I think, you know, interestingly, in the legislation creating our ocean plan they use a term called "appropriately scaled." And that is left to my office to figure out. And that involves things like, and explicitly in the statute, proximity to population centers.

So those ideas are put into the overall criteria that we are supposed to be looking at as we pick sites in our state ocean plan, as we go through the process. And that is how they decide that.

Mr. CHAFFETZ. So the view line, the site, the aesthetics does or doesn't play a role in your deciding whether or not to site something?

Mr. BOWLES. Well, it does play a role in the ocean planning process, yes. I mean, in terms of the idea of impacts includes those of community preferences, things like that.

Mr. CHAFFETZ. OK. Mr. Diamond, do you care to respond to this idea and this notion about, you know, is it better to build a liquid natural gas, and LNG, and import gas? Or should we consider responsible development off the coast as a balance?

Mr. DIAMOND. I certainly believe that from a balance of payments perspective, one can't argue with the fact that producing more of your energy at home will give less money to send overseas to purchase it.

Certainly when it comes to natural gas, I think we have to be particularly concerned if there is climate change legislation, that the electricity providers turn to natural gas. It is going to grow in demand, and, well, there is no global market today, but no one knows what happens 20 years down the road.

So I think it is certainly important that we always produce what we can domestically, responsibly.

At the same time, we have to end our dependence on fossil fuels. And that is going to take 50, 100 years even. But the point is, we should be using it responsibly now in order to fund and to make sure we have a thriving economy that can afford the environmental protections and the technologies we will need to continue the economy to grow.

I will have to turn the——

Mr. ABERCROMBIE. Will the gentleman yield one moment?

Mr. CHAFFETZ. It is clearly more up to the Chairwoman. I am out of time here. I would be happy to yield.

Mr. ABERCROMBIE. Could I make a quick observation, Madame Chair? It is very important what Mr. Diamond just said. There are

some new members on the committee, and they may not have picked up.

There is no world market in natural gas, right? This is not like oil right now, where we are talking $50-plus a barrel. There is no world market. So we are subject to what we do with regard to natural gas, and what others are doing, right?

Mr. DIAMOND. Right. Currently we have a domestic market. The price of gas is somewhat, somewhat tied to the price of oil, but more and more every day it is being decoupled. So the truth is we have a domestic market that is with Canada.

Mr. BOWLES. Let me just add to that, if I might, Congressman, to say that last summer, when some of the nuke plants went offline in Japan, that did lead to an increase in natural gas prices in Massachusetts. So there are, it is less liquid market than the case of oil.

Mr. ABERCROMBIE. My point, Madame Chair, is that we are utterly and totally reliant on what we do. And we are paying a lot more for natural gas, and they are going to be subject to doing that more than other nations are.

Ms. BORDALLO. Thank you. I thank the gentleman from Hawaii and the gentleman from Utah.

Now I would like to recognize the gentlelady from California, Mrs. Capps.

Mrs. CAPPS. Thank you, Madame Chair. And I appreciate very much this hearing. I think it is such an important topic for us as we consider a comprehensive energy policy, to be talking about what is going to happen on the Outer Continental Shelf.

I want to continue my colleague from Utah's somewhat line of questioning. And I guess I am going to be picking on the Hon. Ian Bowles for the first question I ask.

Thank you all, each of you, for your testimony.

Mr. Bowles, I am about to introduce a bill called the Coastal State Renewable Energy Promotion Act, kind of a mouthful. But it is designed to provide grants to states so that they can survey the coastline, their own coastline, to identify areas suitable for renewable energy development, like wind and wave.

The bill will reward those companies that choose to develop in these suitable sites. In other words, make a little bit of a carrot around it, by expediting their permitting process.

You are at the state level. You are kind of where all this happens. We both agree that maintaining the state consistency provisions of CZMA is so vital to ensuring that strong projects advance.

So I want to know what you think of this legislation, and other ways that you might suggest that we help avoid consistency conflicts. In other words, anticipate them ahead of time, lay out a framework, so that we can site offshore renewable energy projects in an efficient and environmentally friendly manner.

Mr. BOWLES. Thank you, Congresswoman. Let me just say I think your legislation is terrific, and our state would be——

Mrs. CAPPS. I may use you.

Mr. BOWLES.—very supportive of it. I note that you are co-sponsoring it with my Congressman from Cape Cod, where I vote, Bill Delahunt. And I commend him and you for your work on it. I think it would be very helpful for us.

I am glad you brought up Coastal Zone Management's Federal consistency, and I just want to put on the record that 98 percent of these coastal, of these Federal consistency findings across the Nation are favorable. For those who talk about wanting to kind of chip away at that authority, I would encourage you to strongly protect it, and reauthorize it.

I would add a point that I made earlier, Congresswoman, about the need for NOAA to have some central point of working with states like ours who are doing this type of work, and certainly embrace the point you are making about wanting to have a proactive zoning process based on good science that says here is the places that we prefer to put these things, and here are the places that are not appropriate.

As we conclude our process in state waters, we will have some sites that we want to look at for wind development that will straddle into Federal waters. And we would like to have the Federal government having already been at the table for our process, so when it comes they say great, you know, we all looked at this together, instead of starting a new full EIS process, which I don't think would make sense.

Mrs. CAPPS. I appreciate that very much, particularly the tie to the Federal.

Dr. Kitsos, from your perspective on the Joint Ocean Commission, with that initiative, you may be able to also give maybe some advice and others. Should we be doing more in this arena, these kinds of surveys and assessments, in order to implement smart marine spatial planning?

Mr. KITSOS. Well, we think that there is so much more that needs to be done by the Administration and by Congress in the implementation of the recommendations from the Pew Commission and the U.S. Ocean Commission, as you know, Congresswoman. And I know you have spoken with Admiral Watkins and with——

Mrs. CAPPS. Yes.

Mr. KITSOS.—Mr. Panetta on numerous occasions.

We are, the Joint Ocean Commission Initiative is taking a growing interest in marine spatial planning as a possible way to address some of the issues that the Secretary just spoke about.

And so I think, in a nutshell, the answer is yes, cautiously. And dealing with the ocean is just a different kind of animal than zoning on land. And it is going to require some, some dexterity, I think, on the part of everybody. But it is doable, and it should lead to a predictable system.

Mrs. CAPPS. Well, I want to follow up by asking you, I mean, you say it is a different animal. It is different in many ways.

What are some of the factors that we should consider as we try to manage offshore energy development, and implement marine spatial planning?

Mr. KITSOS. Well, the issues are where, with respect to conventional oil and gas, where does the oil and gas reside. That is always the issue that the lessees are interested in. And with respect to renewables, where are the best sources of wind turbine power, wind and so on.

And then where are the population centers, where are the areas of critical need, where are the most environmentally sensitive

areas. And figure out, through some kind of spatial planning, what is most appropriate, based on what the needs of your state are.

Mrs. CAPPS. Well, I appreciate that very much. And Madame Chair, I know that my time is over. But I just want to underscore what you just said.

Because I think we now, we have this opportunity. And we didn't maybe have it as much with land development. So we should learn from mistakes we have made on shore, and really use now—and I want to make sure that we consider, in any legislation that we do here, the socioeconomic and cultural factors that very much, if we don't, they will come back and hurt us.

And many of our most vulnerable populations reside at the coastal edge, as well. And are so deeply—and I am thinking of the LNG siting—are so much impacted by how we develop offshore energy projects, particularly I want to stress in the area of renewable.

I thank you very much.

Ms. BORDALLO. And I thank the gentlelady from California. And I wish to thank all of the witnesses on this panel for their testimonies. Members of the Subcommittee may have some additional questions for the witnesses, and we will ask you to respond to these in writing.

The hearing record will be held open for 10 days for these responses. And you are now excused.

Will the second panel please be seated, as soon as possible?

I announce that the Subcommittee Chair on Energy and Mineral Resources has stepped out of the room for just a few minutes to make a statement on the Floor. And I will be taking over until he returns.

Would the second panel please be seated? I would like to repeat that the Chairman of the Subcommittee on Energy and Mineral Resources, Mr. Costa, has stepped out of the room for just a few minutes. He has to deliver a statement on the Floor. So I will be taking over until he returns.

And I would now like to recognize our second panel of five witnesses. Captain Keith Colburn of K.H. Colburn, Inc.; Dr. Jeffrey Short, the Pacific Science Director for Oceana; Dr. Kathrine Springman, the Assistant Editor for Marine Environmental Research; Dr. Christopher Clark, the Director of Bioacoustics Research Program at the Cornell University Laboratory of Ornithology; and Mr. Brad Gilman, testifying on behalf of Mayor Stanley Mack, Mayor of the Aleutians East Borough in Alaska.

And just as we did for the previous panel, the timing lights on the table will indicate your time. You will have five minutes to testify. When the yellow light comes on, you will have one minute to wrap up your testimony. And when the red light comes up, your time will have concluded.

Your full statement, however, will be submitted for the hearing record.

As Chairman of this Subcommittee, I now recognize Captain Keith Colburn to testify for five minutes.

STATEMENT OF CAPTAIN KEITH H. COLBURN, K. H. COLBURN, INC.

Mr. COLBURN. Chairman Costa, Chairwoman Bordallo, Ranking Members Lamborn and Brown, I would like to thank you for the invitation to provide comments on energy development on the Outer Continental Shelf.

My name is Captain Keith Colburn. I have fished commercially in the Alaskan waters for the past 24 years. I am a U.S. Coast Guard licensed Master, and I own and operate the 155-crab boat, The Wizard.

My fishing grounds are the Bering Sea Aleutian Islands and the North Aleutian Basin, otherwise known as Bristol Bay.

Twenty years ago today, the Exxon Valdez spilled 11 million gallons of crude oil into Prince William Sound. Over 1300 miles of shoreline were soiled, causing billions of dollars in lost revenue to fishermen, communities, Alaska, and the nation.

On the surface, Prince William Sound appears to have recovered. Below the surface, oil still cakes rocks throughout the inner tidal zone.

These were collected just a month ago from Prince William Sound. The Pacific herring fishery is closed, and has developed unprecedented disease and viral infections, and shows no signs of recovery. The ecosystem has been altered.

Today's energy crisis has not abated due to recent global economic events, just been overshadowed. The solutions to our energy crisis should be to consider all alternatives to achieve energy independence. Quoting President Barack Obama, "Each day brings further evidence, that the way we use energy strengthens our adversaries, and threatens our planet."

Science-based energy policies will allow us to develop resources that are viable, and to protect and preserve sustainable resources.

The North Aleutian Basin, NAB, Lease Sale Area 92, is scheduled to be opened in 2011 to oil development. NAB, Area 92, acronyms and numbers suggest it is another generic or obscure offshore vacant lot. The Bering Sea and Bristol Bay are not vacant lots.

As a fisherman, I see the fish basket of America. It is the heartland of an incredibly diverse and rich and productive resource. Forty percent of all the nation's catch is harvested in the Bering Sea. Imagine losing 40 percent of America's breadbasket.

Fish species in the North Aleutian Basin have one common threat: They all inhabit, migrate or propagate the epicenter of Area 92. The North Aleutian Basin has been recognized as one of only three well-managed fisheries in the world. Alaska's fisheries managers have received accolades for their stewardship in maintaining a balance between harvest and conservation.

Oil revenues from Bristol Bay are estimated to be $8 billion over the life of the project. Fisheries revenues from the same area exceed $2 billion annually, and are sustainable.

1978, 1979, and 1980 mark the heyday of king crab. In 1981 a catastrophic crash in the crab stocks occurred. Simultaneous with the crash, the oil industry was conducting hundreds of thousands of seismic tests. These tests were undertaken mostly during the summer months, when the crab were in their most vulnerable state of mating and molting.

Some seismic research on fish exists. However, scientific data quantifying the impacts of seismic tests on shellfish are scant or nonexistent. One preliminary report involving hardshell egg-bearing opilio crab, provided recurring evidence of damage to reproductive systems and larva.

Ongoing noise levels of equipment would create a cacophony of sounds, whose effects are known to disrupt, disorient, and damage vital systems of fish. Pipelines would force crab to reach impasses, alter migration paths for mating, and limit the access to food sources.

Drilling spoils would be in the tens of thousands of tons, suffocating the bottom, and releasing heavy metals. Viral infections and disease would be borne out of the region by migrating fish.

Few places on the planet witness more severe and dramatic weather than the conditions in Bristol Bay. Bristol Bay's 25-foot tides, hurricane-force winds, and Siberian storms combine to create confused and mountainous seas, with wave heights in excess of 40 and 50 feet.

Annual icepack storms down like a freight train, and gets crushed back by massive seas. Cleanup and containment of a spill would be unequivocally impossible in these conditions.

The majority of reserves in Bristol Bay are liquefied natural gas. Currently only one export terminal is shipping LNG. Based in Cook Inlet, Alaska, 100 percent of these reserves are shipped overseas, despite shortages in the local and domestic utilities markets.

Under current law, shipment of LNG from one U.S. port to another requires the vessel be built in the U.S., operate under U.S. flag, and be manned by U.S. licensed officers and crew. Currently, no U.S. ships meet these requirements, and there are no plans by domestic shipyards to construct any.

Bristol Bay's natural gas reserves would not be utilized by American consumers.

Every stage from exploration to extraction in the North Aleutian Basin imposes substantial risks to the essential fish habitat of Bristol Bay. It would be premature to conclude that we can safely explore and extract oil in Bristol Bay, given the absence of scientific studies.

March 24, 1989, is a grim reminder of our dependence on oil and our past policy choices. We must work toward leaving these policies in the 20th century, and focus on energy policies for the 21st century.

Is there any risk level where we would exchange our nation's most prolific ocean food source for the development of oil and gas in the North Aleutian Basin?

Thank you for your time, the opportunity to speak. It has been an honor to represent fishermen. I am happy to respond to any questions that you may have.

[The prepared statement of Mr. Colburn follows:]

Statement of Captain Keith H. Colburn, USCG Master 1600 tons, Owner and Operator of the Fishing Vessel Wizard

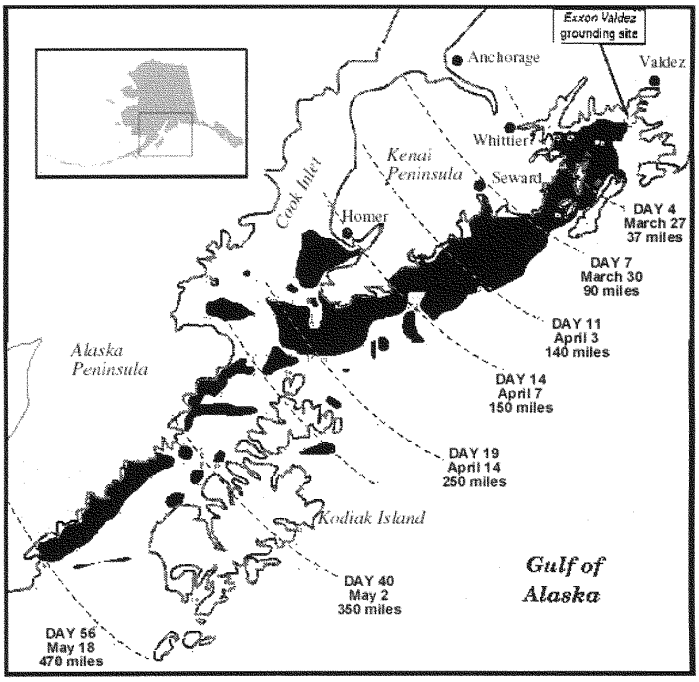
Chairman Costa and Chairwoman Bordallo, Ranking Members Lamborn and Brown, I'd like to thank you for the invitation to provide comments on energy development on the Outer Continental Shelf (OCS) and the future of our oceans.

My name is Captain Keith H Colburn. I have fished commercially in Alaskan waters for the past 24 years. I am a USCG licensed master, and I own and operate the 155' F/V Wizard.

My fishing grounds are the Bering Sea Aleutian Island (BSAI) fisheries, and the North Aleutian Basin (NAB), otherwise known as Bristol Bay. I have fished virtually every species in the NAB, from purse seining herring, gillnetting Bristol Bay salmon, long-lining halibut, and pot fishing cod and crab. The Wizard is a crabber home ported in Seattle, but fishes exclusively in the BSAI crab fisheries.

My concern for the fleet and the resource rests not only with fishing, but with the management, enforcement, and policy surrounding Alaska's fisheries. I previously served as a board member of the Alaska Marketing Association, negotiating prices for fishermen, and I currently serve on the Pacific Northwest Crab Industry Advisory Committee, which is overseen by the North Pacific Fisheries Management Council. I am on the board of the Alaska Fishermen's Safety Association, the overseeing body for insurance that has 63 vessel members of the crab and trawl fleet of Alaska, Washington and Oregon. I am also a member of the Crab Group of Independent Harvesters.

I. The Legacy of the Exxon Valdez Oil Spill



Map from Exxon Valdez Oil Spill Trustee Council. 1993. Map of the *Exxon Valdez* Oil Spill. *1993 State On-Scene Coordinator's Report*. Anchorage, Alaska.

Today, March 24th, 2009, marks the 20th anniversary of one of America's most tragic environmental catastrophes.

Oil from the Exxon Valdez oil spill, shown in dark shading, stretched for miles along the Alaskan coastline.

The Exxon Valdez spilled 11 million gallons of crude oil into Prince William Sound, soiling over 1300 miles of shoreline, as far as 460 miles from the spill site. In all, the death toll to native species of sea birds, bald eagles, seals, killer whales, and sea otters was in the tens of thousands. Tens of millions of salmon, herring, and fish species were destroyed due to the devastating effects of the spill. Every species below and above the surface was affected in the spill, including fishermen and communities that lost millions of dollars in revenue in commercial fisheries and the tourist industry.

On the surface, the pristine nature of Prince Williams Sound appears to have recovered its storied beauty as one of the jewels of Alaska's wild and untouched coastal areas. Below the surface is another story. Oil still cakes rocks and cobbles

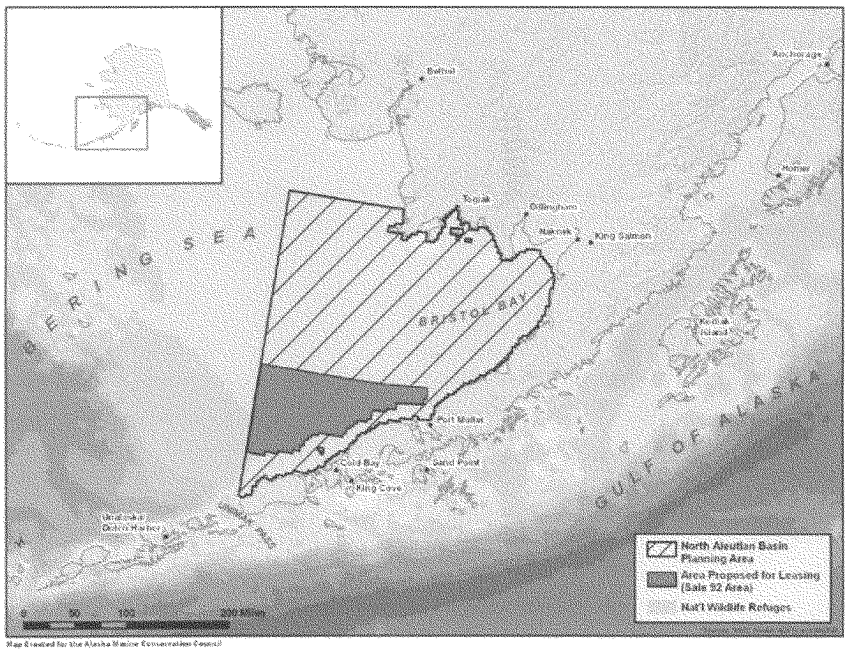
throughout the inter-tidal zone. The Pacific herring fishery is closed and shows no signs of recovery. Since the spill, this herring stock, which is central to the marine food web, has developed unprecedented disease and viral infections to all year classes of fish. The ecosystem has been altered, and it will be generations before the true effects of the spill can be ascertained.

II. Looking Ahead: Outer Continental Shelf oil development in Alaska

In recent years, the troubled Minerals Management Service has moved to develop offshore Alaska with an alacrity rarely seen in a federal agency. In the past year alone, the MMS has expanded the territory available for leasing in Alaska's offshore waters from roughly 10 million acres to more than 80 million. Earlier this year, MMS leased 2.9 million acres of that newly opened territory to oil companies in the remote Chukchi Sea. In addition, another 25 million acres of state and federal lands in the U.S. Arctic—onshore and off—are open to oil and gas leasing; of that, 13.5 million acres have already been leased. The only area that now remains totally off-limits to oil drilling is the coastal plain of the Arctic National Wildlife Refuge. The past administration's protocol of drilling our way to energy independence was misguided and was fueled by prices at the pump eclipsing $4.00 per gallon. But with our financial institutions in ruins, and our economy battered, gas has dropped to $2.00 per gallon.

Today's energy crisis has not abated due to recent global economic events, but it has just been over shadowed. Fuel prices for diesel eclipsed $5.00 per gallon less than 6 months ago for Alaska's fishing fleet. This was not a localized event, but a worldwide crisis. The blissful ignorance of "drill baby drill" resounds in my ears, and reminds me that the solutions to our energy crisis should look beyond resource extraction. We are at a crossroads in our nation's history where difficult choices need to be made to achieve energy independence. Quoting from President Barack Obama's Inaugural Address, "Each day brings further evidence that the ways we use energy strengthen our adversaries, and threaten our planet." Based on the president's recent statements, I am confident that the choices we will make in the months and years to come are now backed by scientific evidence, and will lead to energy policies based on science. These intelligent choices will allow us to develop the resources that are viable, and to protect and preserve sustainable resources for future generations.

North Aleutian Basin Fisheries

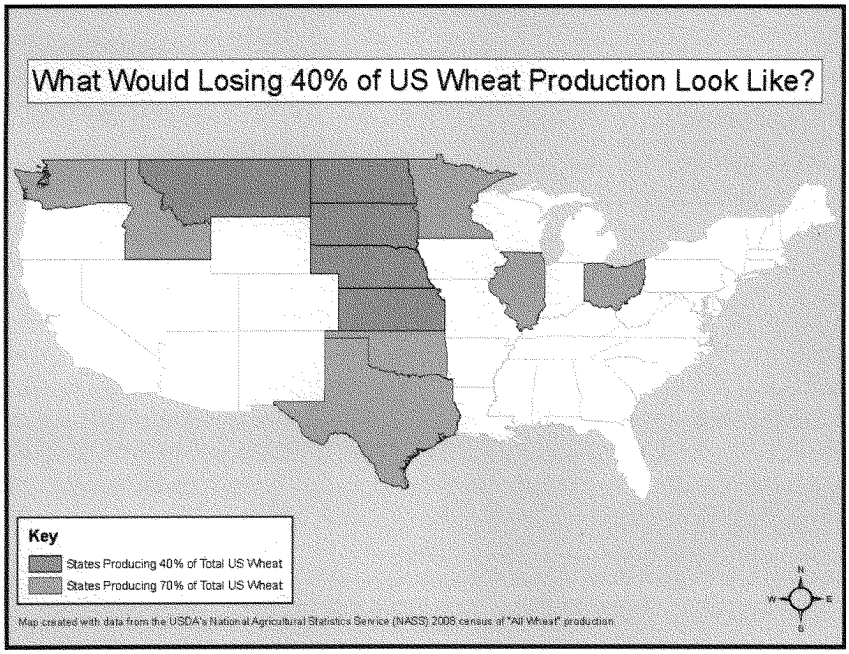


Map Created for the Alaska Marine Conservation Council

The North Aleutian Basin (NAB) lease sale Area 92 is scheduled to be opened in 2011 to oil development.

NAB, Area 92: acronyms and numbers suggest it is another generic or obscure offshore vacant lot, but the Bering Sea Aleutian Islands (BSAI) and Bristol Bay are not just vacant lots.

As a fisherman, I see the bread basket, the fish basket of America. It is the heartland of an incredibly diverse, rich and sustainable resource. Forty percent of the catch from U.S. domestic fisheries is harvested in the BSAI fisheries. This can easily be overlooked as another obscure statistic, but what if we were talking about 40% of America's wheat production? The Bering Sea and Bristol Bay represent in seafood what the states of Kansas, Montana, Nebraska, North Dakota and South Dakota combined represent in U.S. wheat production.



The North Aleutian Basin comprises millions of square miles offshore of Alaska. It has been recognized by National Geographic as one of only three well-managed fisheries in the world. Fisheries managers using science-based management overseeing Alaska's ocean received accolades from around the world for their stewardship in maintaining a balance between harvest and conservation.

Pollock, halibut, cod, herring, sole, salmon, and crab make up part of the list of commercially harvested species in Area 92. These species have one common thread. They all inhabit, migrate, or propagate in one of the world's most prolific and diverse marine ecosystems. Our nation's most valuable sustainable fisheries resource, our fish basket, lies at the epicenter of lease sale Area 92.

On the other hand, oil revenues from Area 92 are estimated to be 8 billion dollars over the life of the drilling project. Fisheries revenues currently derived from the same area are in excess of 2 billion dollars annually "that's 50-80 billion dollars over the life of the drilling project "and the fisheries are fully renewable and sustainable where the oil is not.

Economic Value of Bristol Bay and Southeastern Bering Sea Fisheries

February 2008

Sustainable fisheries resources potentially affected by offshore oil and gas drilling in the North Aleutian Basin Planning Area are worth more than $2 billion dollars annually

The economic figures for the fisheries provided below are intended to give an approximate assessment of the value of the fisheries that could be affected by oil and gas development in the portion of the North Aleutian Basin Planning Area currently scheduled for leasing 2011 (Sale 92 area). These fisheries were determined to be potentially affected by the impacts of offshore oil and gas development based on two criteria: 1.) the fisheries take place within or surrounding the proposed lease sale area (Sale 92 area) and/or 2.) the species that are fished utilize habitat within or surrounding the area proposed for leasing.

The impacts of oil and gas development would extend beyond the proposed 5.6 million acre lease sale area. Offshore seismic surveys, infrastructure construction and emplacement, vessel traffic, the discharge of drilling muds and cuttings, as well as chemical or oil spills could affect fisheries that occur inside and outside the lease sale area. Oil and gas activities have the potential to cause displacement from fishing grounds, degradation of fish habitat, as well as lethal and sublethal impacts to fish and their prey. Even the perception of a reduction in the quality of product harvested in the region could drive down prices on the world market.

Values after processing were only available for the federal groundfish fisheries. In all other fisheries the ex vessel values, or value before processing, are given below. Thus, the total value for these fisheries actually exceeds the numbers presented below, as value after processing is higher than the price paid to fishermen at the dock.

Federally-Managed Bering Sea/Aleutian Islands (BSAI) Groundfish 2005 Value after Processing (includes pollock, Pacific cod, and flatfish)[1]:	**$1.7 billion**
Pacific Halibut 2006 Ex vessel value[2]:	**$193 million**
Salmon 2007 Ex vessel values[3]:	
• Alaska Peninsula/Aleutian Islands Salmon	$27 million
• Bristol Bay Salmon (includes sockeye and other species)	$108 million
• Kuskokwim Salmon	$1.2 million
• Yukon Salmon	$2.5 million
Total Salmon:	**$138.7 million**
Shellfish 2006 Ex Vessel Values[4]:	
• Red King Crab 2006 ex vessel value:	$78 million
• Tanner Crab 2006 ex vessel value:	$1.2 million
Total Shellfish:	**$79.2 million**
State-Managed Groundfish 2007 Ex Vessel Values[5]:	
• Bering Sea/Aleutian Islands	$4.3 million
• Alaska Peninsula	$6 million
Total State-Managed Groundfish:	**$10.3 million**
Bristol Bay (Togiak) Herring Sac Roe 2007 Ex Vessel Values[6]:	
• Seine	$1.4 million
• Gillnet	$ 492,000
Total Herring:	**$1.9 million**

Overall Total Value: more than $2.1 billion

Effects of oil exploration, and extraction

Today on the anniversary of a major oil spill, it is important to shed light on both improvements and remaining gaps in the capacity to respond to oil spills in Alaska's northern waters, but there are many other aspects of the proposed lease sale in the North Aleutian Basis which are cause for concern among Bristol Bay fishermen like myself. These include the use of seismic activity in the exploration phase; the dumping of drilling wastes into the marine environment; and the disturbance posed by infrastructure and traffic.

Seismic activity

There is increasing concern regarding the effect of human-generated (anthropogenic) sounds on marine organisms. While most concern is focused on marine mammals, many of the lower frequency (under 1,000 Hz) sounds are also likely to affect fish. Fish are of particular concern since many species use sounds to find prey, to

avoid predators, and for social interactions. Sounds may affect behavior and/or physiology, although very little is specifically known about how sounds affect fish. Moreover, the sensory receptors used by fishes to detect sounds are very similar to those of marine (and terrestrial) mammals, and, as a consequence, sounds that damage or in other ways affect marine mammals could have similar consequences for fishes (Popper, 2003). Study findings of altered fish behavior from seismic shooting support the basis for management actions in Norway against seismic shooting on and close to spawning grounds and over well-established migration routes to spawning grounds (Slotte et al, 2004). See Table 1 for a summary of one study demonstrating impacts of seismic on fish.

While less is known about the impacts of seismic activity on crabs, observations and data on fisheries catch indicate a potential adverse impact of seismic on this population.

1978-1980 marked the king crab heyday. Landings of Bristol Bay red king crab exceeded 100 million pounds each year, five times our current harvest level. In 1981, a catastrophic crash in the crab stocks occurred. Simultaneous with the crash however, the oil industry was conducting hundreds of thousands of seismic tests in the same waters. These tests were undertaken mostly during the summer months when the crab stocks were at their most vulnerable state of mating and molting.

Table 1: Reductions in fish catch rates as a result of seismic survey activity

Species	Gear type	Noise level of seismic testing	Catch reduction	Source
Atlantic cod (*Gadus morhua*)	Trawl	250 decibels (dB)	46-69% lasting at least 5 days	Engas et al. 1993
Atlantic cod (*Gadus morhua*)	Longline	250 dB	17-45% lasting at least 5 days	Engas et al. 1993
Atlantic cod (*Gadus morhua*)	Longline	Undetermined. 9.32 miles from source	55-79 % lasting at least 24 hours	Lokkeborg and Soldal. 1993
Haddock (*Melanogrammus aeglefinus*)	Trawl	250 dB	70-72% lasting at least 5 days	Engas et al. 1993
Haddock (*Melanogrammus aeglefinus*)	Longline	250 dB	49-73% lasting at least 5 days	Engas et al. 1993
Rockfish (*Sebastes* spp.)	Longline	223 dB	52%- effect period not determined	Skalski et al., 1992

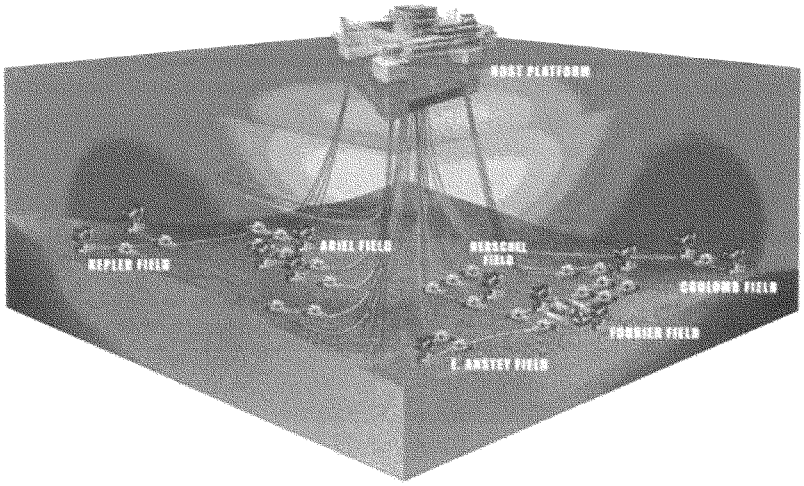
Whereas a multitude of studies show the detrimental effects of seismic testing to fish, scientific data and reports quantifying the impacts of seismic tests on shellfish are scant or non-existent. One preliminary report, the 2004 study by the Canadian Dept. of Fisheries and Oceans, involved hard-shelled, egg bearing opilio crab. It revealed that damage observed to opilio crab organs provided recurring evidence of abnormalities in their reproductive systems, hemorrhaging and bruising of the ovaries, as well as dilated and detached membranes. In test animals, larvae that survived to hatch were weaker and smaller than normal larvae, with smaller eyes and spines.

As a fisherman, I do look at the entire marine ecosystem. Ongoing seismic concussions would pummel the sea bed for the duration of the project, affecting migratory paths of marine mammals such as whales, seals, sea lions, and walrus that transit and forage in the area. Any reverberations to egg-bearing ground fish and crab that mate and spawn could be catastrophic—for people as well as these other species in the Bristol Bay ecosystem.

Infrastructure, and Development

The impact to Bristol Bay's waters during initial and development stages of drilling would also be severe. Disruption of the bottom in both stages would be substantial. Turbidity throughout the water column severely impact plankton and other food sources throughout the food web.

The noise levels of drills, pumps, de-sanders, compressors, and multi phase boosters would create a cacophony of sounds whose effects are known to disrupt, disorient, and damage vital systems of mature, and adolescent fish. Unknown are the effects on crab and fish larvae. Additionally, pipelines would force crab and migratory bottom dwellers to either reach impasses, or alter their migration paths, and impede their access to food sources.



Oil platform with multiple fields (Stocker. *Pacific Marine Expo 2008*).

On top of this, drilling spoils would be in the tens of thousands of tons, suffocating the bottom, and releasing high levels of heavy metals such as mercury, cadmium, zinc, chromium, and copper. In these amounts, these are toxic to every organism in the surrounding area, and would subject animals to viral infections and disease. That would be consequently borne out of the region by migrating fish.

Weather

In addition to the anthropogenic activities described above, one of the most significant challenges facing a potential offshore lease sale is weather. Few places on the planet witness more severe and dramatic weather conditions than Bristol Bay.

Flooding northeast and ebbing southwest, the tidal activity in the Bristol Bay area is routinely in excess of 25 feet. Storms originating in the Orient and combining with low pressure systems from Siberia travel over 2000 miles, and intensify when they hit Alaska's land mass. Wind velocities that exceed hurricane strength are commonplace during winter months. The sea state associated with these storms as they intensify, traveling through the birthplace of storms in the North Pacific, regularly create wave heights of 30-50 feet. The opposing current from the Bristol Bay ebb turns these waves into confused, sharp, and mountainous seas experienced in few other places on the planet.

Annual ice pack reaches into Area 92 frequently, and then gets crushed back by massive seas. Clean up and containment of a spill would be unequivocally impossible in these conditions.

While the oil industry has experience working in areas with comparable tidal action and smaller confined areas with ice conditions, they have never undertaken developing at sea equipment that has been tested to withstand all three conditions, wind waves and ice, that regularly pummel the Bristol Bay region simultaneously.

Liquid Natural Gas (LNG)

While much of our discussion and concern centers on oil and the possibility of oil spills, the majority of reserves in Area 92 is in Liquified Natural Gas. However, there are many social and environmental risks associated with developing this resource as well.

To begin, it is doubtful whether local people would benefit in any form from the products that may be close in proximity but may not become available for remote communities hoping to get cheaper heating fuel. Under current law, shipment of LNG from one U.S. port to another requires the vessel be built in the U.S., operate under U.S. flag, and be manned by U.S. licensed officers and merchant mariners. However, currently no U.S. ships meet these requirements, and there are no plans by domestic shipyards to construct any. Without a regulatory change to allow foreign flagged vessels to transport LNG to domestic ports none of Bristol Bay's natural gas reserves would be utilized by American consumers.

There is currently only one export terminal in the U.S. shipping LNG. Based in Cook Inlet, Alaska, 100% of these reserves are shipped abroad to Japan despite shortages in the local and domestic utilities markets. Thus, hundreds of Alaska coastal residents counting on some benefits from this risky endeavor are likely to be left out of the picture.

Furthermore, the increase of foreign flagged vessels in our pristine fishing grounds is of great concern. Increased traffic by vessels from nations whose safety requirements are almost always less stringent than those in the U.S. is another contributing factor to the risk.

III. Summary

Drilling for a finite resource in Bristol Bay is not worth jeopardizing America's most prolific and sustainable fisheries resource. Every stage from exploration to extraction in the NAB poses substantial risks to disrupting essential fish habitat and the delicate marine ecosystem. There are no conclusive scientific studies that can state otherwise. In the absence of scientific studies gauging the effects of seismic testing and long term excessive noise levels, it would be premature to conclude that we can safely explore and extract in Area 92.

The potential for disaster is exacerbated by the climactic environment, which is one of the harshest and most unforgiving on the planet. The reserves there would not help curtail the immediate energy crisis, but only exacerbate it, and the nation would not see any benefits to the energy crisis by exporting it overseas.

Noise, suspended sediment and toxic waste would completely disrupt the ocean floor and the delicate marine ecosystem. If we are to look to our northern European neighbors who have had fisheries and oil drilling co-exist for years, we will find no solace. Although touted for its successful coexistence of oil and fisheries, Norway has seen a 39% drop in fish stocks since offshore oil began working in the Barents and North Seas. The interconnected nature of the marine ecosystem in Area 92 guarantees that the effects of exploration and oil extraction would spread well beyond the lease sale area and into the entire Bering Sea.

March 24th,1989 is a grim reminder of our dependence on oil and the monumental catastrophes that can result from our policy choices. We should be working toward leaving these policies in the twentieth century, and focusing our efforts on smarter energy policies for the twenty first century. We have an obligation to our children, to our environment and to our sustainable resources. As a country, it's time to remember we have to lead by example. We have the scientific and engineering prowess to lead in the new fields of renewable energy production. Risking our nation's fish basket for oil reserves would only throw us back to the policies of the past, not propel us into the future. Is there any risk level in the development of oil and gas in the North Aleutian Basin where we could say we would give our nation's most prolific ocean food source in exchange? I don't think so.

Thank you for your time, your consideration, and the opportunity to speak before you. It has been an honor to speak on behalf of fishermen that want to continue the sustainable harvest of seafood in the pristine waters of Bristol Bay Alaska. I am happy to respond to any questions that you may have.

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Ms. BORDALLO. Thank you very much, Captain Colburn. As Chair, I am going to have to hold you to the five minutes. We just went into session, and I may be losing more Members up here, and I don't want to be all alone.

So the Chairman now recognizes Dr. Jeffrey Short to testify.

STATEMENT OF JEFFREY SHORT, PH.D., PACIFIC SCIENCE DIRECTOR, OCEANA

Mr. SHORT. Good afternoon, Madame Chairman and members of the committee. For the record, my name is Jeff Short. I am a Ph.D. in fisheries, and have a master's degree in physical chemistry. And I live in Juno, Alaska.

I recently became Pacific Science Director for Oceana, an international marine conservation organization of more than 300,000 members.

Ms. BORDALLO. Would you move a little closer to the mic, please?

Mr. SHORT. Dedicated to using—I recently became the Pacific Science Director for Oceana, an international marine conservation organization of more than 300,000 members, dedicated to using science, law, and policy to protect the world's oceans.

I have lived in Alaska for 37 years, and I have been with the National Oceanic and Atmospheric Administration for 31 of those years, working on the effects of oil pollution, including the impacts of the Exxon Valdez oil spill.

Today I want to summarize where we were, leading up to the spill, and what we have learned since, and what we are proposing for the Arctic.

The debate over the development of the Prudhoe Bay oilfield was in full swing when I first moved to Alaska in 1972. I recall the assurances from the oil industry that they would vigilantly apply the best available technology to build and maintain the oilfield, the Trans-Alaska Pipeline, and the marine oil terminal at Valdez. And that should an accident occur, they would respond aggressively with a ready arsenal of equipment.

Fishermen, who were part of the largest private employment sector in the state, were skeptical, fearing a large spill could wipe out their livelihoods. Their fears were confirmed when the Exxon Valdez hit Bligh Reef, and spilled enough oil to wreck the most important fisheries in the region, as well as jeopardizing Alaskan natives' subsistence way of life, killing thousands of marine mammals, hundreds of thousands of birds, and millions of fish, all migrating to Prince William Sound, the last great protected estuary in North America, not yet decimated by coastal settlement and industrialization.

Despite 11,000 cleanup workers and $2 billion, only about 8 percent of the spilled oil was recovered.

We face the same situation again, regarding offshore oil development in Alaska. More than 70 million acres are being offered for sale to oil companies. These are among the most productive and fragile parts of the ocean anywhere.

The Bering Sea pollock and crab fisheries are the most lucrative in the world, and the Beaufort and Chukchi Seas support subsistence needs of thousands of Alaska natives.

Worse, these ecosystems are already reeling from the impacts imposed by climate change, and soon to be exacerbated by ocean acidification. Biological communities are demonstrably moving north, from the Bering Sea to the Chukchi, and east from the Chukchi to the Beaufort. And the dramatic losses of sea ice during summer is changing how these ecosystems work at the most fundamental level.

The Arctic Ocean can least afford an oil spill. And we are talking about bringing icebreakers, seismic testing, pipelines, and other industrial activities to areas with little or no infrastructure to deal with them. Again, we hear the same assurances from the oil industry. And while I applaud all the industry has done to improve their safety record and practices, I remain convinced that no amount of technology can fully guard against complacency, the incessant drive to minimize costs, and human error.

We have yet to see a spill response technology that really works in the midst of ice during the long Arctic night, or when seas are rough.

Given how little we know about the Arctic, adding even more stress from industrial development amounts to a high risk and ecologically high-stakes gamble. In recognition of these stresses, the North Pacific Fishery Management Council recently voted unanimously to preclude commercial fishing in the U.S. Arctic Ocean until enough is known about how these ecosystems work, to set safe harvest levels with some measure of confidence. The same logic applies to oil development.

In the end, we at Oceana agree completely with Dr. Jane Lubchenco, the newly confirmed Administrator of NOAA, when she

says the real choice, I think, is between short-term economic gain and long-term economic prosperity, in which long-term economic prosperity depends on a healthy environment.

We urge the U.S. Congress to take immediate action to suspend all offshore development in the Arctic, unless and until it can be demonstrated, through a science-based precautionary approach, that such activity can be conducted without further jeopardizing the health and well-being of the ecosystems, and the people who depend on them.

Further, the moratoria against leasing in the lower 48 and Bristol Bay were instituted and maintained nationally to guard against the risks described above. These moratoria should be reinstated.

Thank you for this opportunity to comment. It is a real privilege to be here, and I would be happy to work with the committee any way as you consider oil and gas development in our nation's oceans.

Thank you.

[The prepared statement of Mr. Short follows:]

Statement of Dr. Jeffrey Short, Pacific Science Director, Oceana

Good morning. I am the Pacific Science Director for Oceana, an international marine conservation organization dedicated to using science, law, and policy to protect the world's oceans. Oceana's headquarters are in Washington, DC, we have offices in five states as well as Brussels, Spain, and Chile. Currently, we have offices in Juneau and Kotzebue, Alaska, and bring more than 250 years of experience working and living in the state. Oceana has 300,000 members and supporters from all 50 states and from countries around the globe.

Today marks the 20th anniversary of the *Exxon Valdez* oil spill, the largest spill in our nation's history and one of the most environmentally damaging spills in the world. Within a week of the incident, that spill and its effects were the focus of my research. Prior to joining Oceana, I spent more than 30 years as an environmental chemist studying oil pollution fate and effects as an employee of the National Oceanic and Atmospheric Administration (NOAA). In that role, I led numerous studies on the *Exxon Valdez* oil spill beginning a week after the incident through my retirement from NOAA last November (2008). I have a Master of Science degree in chemistry, and I wrote the doctoral dissertation for my PhD in fisheries on data generated by the spill. With more than 50 professional papers on the *Exxon Valdez* oil spill and related topics, I have advised governments in Canada, China, Korea, Norway and Russia on oil pollution issues, making me an internationally recognized authority on oil pollution.

I have dedicated most of my professional life to understanding the *Exxon Valdez* oil spill, and now to helping ensure that we do not repeat the mistakes of the past. We are coming dangerously close to heading down that path. More than 70 million acres offshore in Alaska either have been made available for oil and gas leasing, exploration, and development or are slated to be offered in the next few years. These areas are crucial for the lives of local residents, are among the most pristine ecosystems in the world, and are increasingly threatened by climate change and ocean acidification. They are also remote places in which no technology currently exists to respond to or clean up an oil spill effectively. Concurrently, there has been a push to allow oil drilling in offshore areas of the contiguous United States that have been closed to these activities for more than 25 years. Just last year, Congress and the president let lapse moratoria that protected these areas.

My testimony will focus on the Alaskan Arctic and, in particular, the Beaufort and Chukchi seas. I will summarize some of the scientific lessons we have learned from the *Exxon Valdez* spill, and their implications for future development of offshore oil and gas resources around Alaska. Together, these facts make a compelling case for a comprehensive, science-based, precautionary approach to oil and gas activities in the Arctic and for reinstating and extending the moratoria on offshore development in the United States.

I. Introduction

The stage was set for the *Exxon Valdez* oil spill nearly two decades before it happened with the decision in 1973 to authorize the trans-Alaska pipeline to the Valdez

marine terminal. That decision was strongly opposed by the fishermen of Prince William Sound, who were skeptical of the assurances from the oil industry regarding all the modern safeguards that would be put into place. These fishermen feared, correctly it turned out, that a large spill could ruin their livelihoods. At the time, commercial fishing was the leading industry in the State of Alaska, employing more people and generating more revenue than any other private sector employer. Fisheries in Prince William Sound were especially well developed, harvesting enormous runs of pink, sockeye and other salmon, supplemented by halibut, herring and rockfish.

Prince William Sound is one of the great sheltered coastal embayments of North America, comparable in size to the Chesapeake Bay, Albemarle Sound, San Francisco Bay or Puget Sound, and comparable as well in its magnificent natural bounty. There is one big difference: Prince William Sound is not seriously impacted by sustained coastal population growth and industrialization. As such, it supports very high populations of local and migratory birds and marine mammals, from puffins to peregrine falcons, and sea otters to killer whales. It is a major stop on the Pacific flyway, where birds land after long flights across the Gulf of Alaska to re-provision themselves and either reproduce in the immediate area or move on to the vast breeding grounds of the western and northern Alaskan coastal plains. Their timing coincides with the spring phytoplankton bloom in the ocean, when increasingly long days and calmer waters turn the sea green with algal plant growth. Nearly half the annual nutritional requirements of the entire food web in this area are produced over the course of just a few ensuing weeks. The bloom starts in the protected waters of Prince William Sound and radiates out to the Gulf of Alaska, so the Sound acts as a magnet attracting fish, birds, and marine mammals hungry after the long winter. This magnet lured many of these animals to their deaths soon after the *T/V Exxon Valdez* hit Bligh Reef on March 24, 1989, just before the beginning of the spring bloom.

II. Lessons from the *Exxon Valdez* Oil Spill

The *Exxon Valdez* oil spill was caused by human error and occurred despite the assurances that the best available technology would make such events extremely unlikely and that new response methods would limit environmental damage should a spill occur. After hitting Bligh Reef just after midnight, the *Exxon Valdez* began discharging oil, creating an oil slick that expanded at a rate of nearly half a football field per second, and it continued expanding at this rate for two and a half days. By the time it was daylight a few hours later, containment was probably not feasible even in optimal circumstances and no matter how well prepared the responders were. Once a winter storm developed three days later, any remaining hope of containment was lost.

Nearly 11 million gallons of oil spilled from the *Exxon Valdez*. Despite heroic efforts involving more than 11,000 people, 2 billion dollars, and aggressive application of the most advanced technology available, only about 8% of the oil was ever recovered. This recovery rate is fairly typical rate for a large oil spill. About 20% evaporated, 50% contaminated beaches, and the rest floated out to the North Pacific Ocean, where it formed tarballs that eventually stranded elsewhere or sank to the seafloor.

The spilled oil had devastating effects on the area. Thousands of marine mammals, hundreds of thousands of seabirds, and millions of fish were killed by encounters with spilled oil. Beaches were oiled along 1,200 miles of the coast, killing untold numbers of intertidal plants and animals, with additional losses caused by aggressive chemical and physical attempts to clean the shorelines. Together, the oil, chemicals, and other clean up methods caused habitat alteration that will persist for a century or more. Oil penetrated into some beaches, creating toxic reservoirs that are still there today and are likely to remain for decades more. These toxic oil reservoirs guaranteed unforeseen impacts that continued for well over a decade after the incident.

Long-term monitoring led to numerous insights regarding the ways that oil pollution impacts ecosystems. Field observations led to our discovery that the toxic components of oil are deleterious to embryonic development of salmon at concentrations in the parts per billion, over 100-fold lower than had previously been considered dangerous. This finding suggests that oil pollution from non-point sources everywhere could pose a much greater threat to fish habitat than previously recognized. Furthermore, the initial mass mortalities of wildlife that died from contact with oil had destabilizing effects on ecosystem function. For example, prey populations exploded following removal of their predators and rockweed removal in the intertidal areas deprived animals of the protective cover needed to avoid dehydration or predation. It took more than a decade for some areas to recover from these destabilizing

effects, and recovery is still in progress in some of the hardest hit places. Another long-term impact came from pockets of oil beneath some beaches that were surprisingly resistant to natural degradation. These pockets retained most of their toxic components for more than a decade, occasionally re-contaminating sea otters and sea ducks that forage in the intertidal areas in search of clams, worms and other prey found there. This chronic re-exposure is likely a substantial if not primary reason why populations of sea otters and birds in the areas hardest hit by oil are only now recovering.

The persistence of oil had serious impacts on the most important predator of all—humans. Despite millions of dollars spent on analyses which demonstrated the absence of oil contaminants in subsistence food items, Alaska Natives in the region would occasionally dig up oil unexpectedly instead of clams. For this good reason, many Native Alaskans had legitimate questions about the accuracy of the chemical analyses, which led many to foreswear subsistence foraging, with devastating consequences for their culture. During the process of collecting, preparing, sharing, and consuming food collected from nature, much of the culture of these peoples is transmitted from one generation to the next, binding the generations together. Hence, severing the link with subsistence, in a very real sense, severs the link between generations, often with tragic results. Because it arises from the perception that their environment has been irreversibly fouled and violated, augmented by suspicion regarding any attempts by outsiders to demonstrate otherwise, this consequence cannot be remedied monetarily. Once lost, it is nearly impossible to re-establish the reverence the younger generation held for their elders, whose knowledge, skills, and abilities are no longer seen as relevant. With their trust in the wholesomeness of the subsistence way of life compromised, many turn to western culture for their future.

The *Exxon Valdez* oil spill took a considerable toll on western commercial enterprises in the region as well. Direct economic losses were likely in excess of $300 million, mostly because of fishery closures to avoid gear contamination by floating oil during the year immediately following the spill, followed by impacts on recreational fishing and tourism. These losses directly affected some 32,000 people whose livelihoods depended at least in part on ecosystem services provided by the region prior to the spill. In addition, the interruption in supply led to permanent loss of market share for pink salmon, the most lucrative fishery in the region. Combined with subsequent population crashes of pink salmon and herring from disease outbreaks and other factors that may have been caused at least in part by the spill, most of these once thriving businesses have never recovered. Using contingent valuation to evaluate costs to Americans who care about wild, productive, and unspoiled places like Prince William Sound even if they do not ever visit them resulted in another $1 billion loss estimated from the spill.

The *Exxon Valdez* oil spill did lead to welcome, if belated, improvements in tanker safety in Prince William Sound. As a result of the Oil Pollution Act of 1990, and despite recalcitrance from ExxonMobil Corporation, double-hulled tankers are being phased in. The U.S. Coast Guard has implemented substantial improvements in ice detection and tanker guidance systems. Tankers are accompanied by dual tugs, one of which is towed stern-to-stern by exiting tankers to act as a forceful brake if needed, and the state of oil spill response capability now far exceeds that available prior to the *Exxon Valdez* spill. While these measures undoubtedly reduce the chances of another horrific oil spill, they do not eliminate it, at least in part because each of these systems is still vulnerable to the same sorts of human error that caused the *Exxon Valdez* spill.

The last lesson from the *Exxon Valdez* oil spill concerns hubris. Large marine oil development proposals are invariably presented as engineering challenges, often with scant regard for the complexity of the environment in which they would occur. Oil spill contingency plans are presented as exercises in damage control, under the implicit assumption that the important variables and their interactions are adequately understood, predictable, and manageable. Yet each spill is unique, the environment is extremely complex, and we do not yet understand how these systems interact with and respond to oil. A crucial reason for which the long-term impacts of the *Exxon Valdez* spill have been viewed as so surprising derives from the simple fact that enormous resources were available to evaluate them in comparison with any other spill before or since. In truth, our knowledge of how oil behaves in the environment and how it affects organisms is still in its infancy, especially in the more remote regions of our planet. Hence, any claim that we adequately understand and can foresee how oil pollution will affect even more challenging environments such as the Arctic continental shelf deserves skepticism.

It is clear that oil spills will continue to happen. We need only look to recent news stories to confirm this. The continued use and production of oil has led to spills al-

ready this year, in spite of the improvements described above, and there is no reason to think spills will not continue. In addition to the direct effects of spills, offshore drilling results in considerable releases of oil and other hazardous contaminants that threaten marine life. Furthermore, our use of oil makes a substantial contribution to the impacts of climate change, which is acidifying our oceans. For this reason alone, we should be moving away from oil development, not expanding it. Accordingly, Oceana believes we need to limit offshore drilling by reinstating and extending the pre-existing moratoria on offshore drilling. Furthermore, it is imperative that we take action in the Arctic, where oil and gas activities already have begun. The *Exxon Valdez* experience suggests that the Arctic is at particularly great risk, as described below.

III. Lessons Applied to Offshore Oil Development in the Arctic

The most important lesson we can learn from the *Exxon Valdez* spill is to take every possible precaution to ensure that nothing like it ever happens again. Nonetheless, over the past several years, decisions have been made to open vast new areas of our coastline to offshore oil leasing, exploration, and development. The risks from these activities are particularly acute in the Arctic, where the oceans play a critical role in the culture of Native peoples, there is little available response, rescue, or clean-up capability, and little information about the environment or impacts from oil development is available.

The Beaufort and Chukchi Seas

The Arctic is at once one of the most beautiful and forbidding places on Earth and a critical component of the planet's ability to sustain life. In the Arctic, life swings between twenty-four hour days of sunshine in the summer and the long, cold, and dark winter. Despite those harsh conditions, the Arctic is home to vibrant communities and functioning ecosystems. The Beaufort and Chukchi seas are central to the very existence of Native communities, provide important habitat for countless species of wildlife, and play a vital role in regulating the world's climate.

Tens of thousands of people inhabit the Arctic region of the United States, which is entirely in Alaska. The majority of these residents consider themselves to be Alaska Natives and, though organized into towns and villages like elsewhere in the country, lead a much different life. For many Arctic residents, culture is dependent on subsistence harvesting, sharing of food, travel on snow and ice, traditional knowledge, and adaptation to Arctic conditions. Subsistence harvest of marine and terrestrial mammals, fish, and other resources provides more than just highly nutritious food. Just as with Alaska Natives in Prince William Sound, those activities also ensure cultural continuity and vibrancy by providing spiritual and cultural affirmation, and they are crucial for passing skills, knowledge, and values from one generation to the next.

For coastal villages, the Arctic seas are the centerpiece of life. Coastal people depend on marine plants and animals for food, clothing, and other necessities. For those villages that hunt bowhead whales, that hunt is at the heart of their existence. As stated by Edward Hopson:

> For the coastal Inupiat Eskimo, the hunting of the bowhead whale [agviq] is the heart of our culture. It is the preparation for the hunt, the hunting, and the sharing of the successful hunt that are important. They must all be considered together. The successful hunt feeds us. The successful hunt affirms our shared values and traditions. The successful hunt gives us reason to celebrate together our spirit and sense of identity.

While relatively few whales are taken each year and the hunt is carefully regulated, the importance of the bowhead to coastal Arctic communities cannot be overstated. It is their existence as adapted across generations to the weather, isolation, and rhythms in the Arctic.

In addition to the vibrant communities that have adapted to the top of the world, the Arctic also supports some of the last remaining relatively pristine terrestrial and marine ecosystems. The Arctic is home to populations of some of the world's most iconic wildlife species. Bears, caribou, wolves, foxes, and others patrol the land while the Arctic seas are home to 23 species of marine mammals, including polar bears; bowhead, beluga, and gray whales; narwhal; walruses; and bearded, ringed, and ribbon seals. A diversity of fish and invertebrates can be found in the Arctic as well, including forage species like krill, Arctic cod, and capelin, which are vital to the marine food web. The Arctic nurtures some of the largest seabird populations in the world, and more than 280 species breed there. Several Arctic areas are critical to the birds' survival and have been designated by the National Audubon Society as Important Bird Areas.

These species come to the Arctic seas because they are among the biological crown jewels of the world's oceans. They are especially productive because oxygen concentrations are twice those of tropical waters and strong currents often drive upwelling that supplies nutrients to plants at the base of the food chain, and the productivity of these plants is more sensitive to light than to heat in comparison with their terrestrial counterparts. All these favorable factors are abundant in the Bering Sea, the southern Chukchi Sea, and to a lesser extent the western Beaufort Sea. The annualized rate of plant growth for phytoplankton, the microscopic algae that support the rest of the offshore marine food web, in the southern Chukchi Sea is among the highest in the world. These factors combine to make Bering Sea fisheries the most productive in the United States, as well as making the Bering Sea a biological oasis for a considerable proportion of the world's migratory birds and marine mammals. The southern Chukchi Sea is a biological stronghold for a comparably rich food web supporting Arctic cod, seals, walrus, polar bears, and humans.

These areas also play an important role in regulating our climate. The long periods of little to no sunlight and the high reflectivity of snow and ice when sunlight is present result in a net loss of heat. These factors help drive the circulation of the Earth's atmosphere and ocean currents which transport heat from the tropics to the poles where it is released from the planet. Thus, the health of the Arctic is important to the Earth's atmospheric and oceanic circulation patterns, which affects climate, weather, and natural systems worldwide.

The Changing Arctic

The remoteness and unforgiving climate of the Arctic have provided some protection from the extraordinary human expansion of the last 200 years. Until recently the Beaufort and Chukchi seas were covered in sea ice for much of the year. Now, however, the region is changing. The dramatic reduction in Arctic sea ice over the last few years opens the Arctic Ocean to the possibility of unprecedented industrialization. The expansion of high-risk activities such as oil and gas exploration and development, large-scale commercial fishing, and shipping would add additional pressures to the already-stressed communities, animals, and ecosystems of the far north.

The Arctic is at the forefront of global climate change. It is warming at twice the rate of the rest of the planet, and that warming is causing unprecedented losses of Arctic sea ice. In 2007, the seasonal minimum sea ice extent reached a record low—23% lower than it had been since 1979 when satellite measurements began. In 2008, the minimum sea ice extent was lower than any year but 2007. In addition, ice cover was more diffuse and the ice pack was thinner, suggesting that 2008 may have established a record low ice volume. The rate at which sea ice cover is declining exceeds even the most sensational predictions from just a few years ago, and scientists now predict the Arctic could be seasonally ice-free by 2030.

This loss of sea ice dramatically alters the ways in which these ecosystems function and places them under profound stress. This stress is apparent in changes in the location of phytoplankton growth from the edge of the ice pack to the open water column, a likely increase of productivity in the more open water parts of the Beaufort and Chukchi seas, a general northward displacement of marine life to production regimes for which they are not entirely adapted, and the displacement of habitat for ice-dependent marine mammals from the most productive parts of the seafloor on which they depend to provide for their young.

These stresses are compounded by a companion threat from ocean acidification. Rising levels of carbon dioxide in the atmosphere, which are attributable to fossil fuel combustion by humans, have increased the rate at which carbon dioxide dissolves into the surface of the ocean. Once dissolved, carbon dioxide reacts with water to form carbonic acid, making the ocean waters more acidic. The resulting acidity can attack the calcium carbonate that hardens the exoskeletons of a wide array of organisms ranging from some phytoplankton species to tube worms, clams, crabs, snails, corals, and many others. The Arctic is the most vulnerable ocean in the world to this acidification process. It is so vulnerable because carbon dioxide, like oxygen, is more soluble in cold water, and because the ability of surface seawater to neutralize the resulting carbonic acid is diluted by the large freshwater discharges of the Mackenzie and Yukon rivers in North America and similarly large rivers in Eurasia.

IV. Impacts of Offshore Oil, Leasing, Exploration, and Development in the Alaskan Arctic

At the same time these sensitive ecosystems are changing, large swaths of the Beaufort and Chukchi seas and Bristol Bay are being made available for oil and gas leasing. For much of the past several decades, efforts to expand oil production in Alaska have focused on terrestrial areas, and there was little attention paid to the

Arctic Ocean. That has changed dramatically. Prior to 2008, no leases were owned in the Chukchi Sea. That year, the Minerals Management Service (MMS) held the first lease sale in that area since 1991. It offered more than 34 million acres of the outer continental shelf, and sold leases encompassing nearly 3 million acres. Under the current 2007-12 Five-Year Planning Program, MMS plans to hold two additional lease sales in this area in which approximately 37 million acres would be offered to oil companies.

Similarly, MMS is moving forward aggressively with leasing in the Beaufort Sea. Between 2003 and 2007, three lease sales were held in the Beaufort Sea. In those sales, oil companies purchased rights to leases encompassing more than one million acres. Under the current 2007-12 Five-Year Planning Program, MMS plans to hold two additional lease sales in this area in which roughly 32 million acres would be offered to oil companies. The 2007-12 Five-Year Planning Program also includes a proposed sale encompassing 5.6 million acres in the sensitive Bristol Bay area and a "special interest sale" option for a sale in Cook Inlet.

Much of what we have learned over the past twenty years from the *Exxon Valdez* oil spill applies directly to the leasing, exploration, and development in the Arctic. Given the remoteness and sensitivity of those marine systems, however, those threats may be magnified. We know relatively little about how these ecosystems function, especially north of the Bering Sea. While the Bering Sea has received increasing scientific attention over the last few decades, we still know almost nothing about processes that occur during winter, the critical season when death is most likely and hence when year class survival is most likely to be set. This dearth of knowledge is much worse north of the Bering Sea, where perennial Arctic sea ice has until recently limited our ability to even find out what organisms live there. The lack of scientific knowledge makes the impacts of oil and gas activities extremely difficult to predict, particularly in light of the rapid changes occurring there.

The most dramatic risk, of course, is another catastrophic spill, and MMS estimates that at least one major spill is more likely than not over economic lifetimes of oil reserves in the Beaufort and Chukchi seas. In the environmental impact statement for the 2007-12 Five-Year Leasing Program, MMS estimates that there will be one large spill in either the Beaufort or Chukchi seas. In its 2008 Draft Environmental Impact Statement for the Chukchi and Beaufort Planning Areas produced, MMS estimates that there is a 40% chance of a large spill in the Chukchi Sea and a 26% chance of a large spill in the Beaufort Sea. These percentages may understate the risk because the final technology that would be deployed for oil extraction is not clear, and it is difficult to realistically account for human error.

Given the dearth of experience with producing oil in waters exposed to seasonal pack ice and the acknowledged inability to respond to or clean up any oil releases in the presence of ice, the stage is being set for impacts that could substantially exceed those of the *Exxon Valdez* oil spill. Once again, Alaska Natives, whose continuous inhabitation of this region is longer by far than any other human settlement in North America, and who depend on the ocean for food and culture, stand to lose the most in the event of a major spill.

In addition to a catastrophic spill, oil leasing, exploration, and development bring other threats to the Arctic. Offshore activities necessitate networks of pipelines needed to collect and transport the oil from the fields to the shore from as much as 50 miles away, new storage and port facilities along the coast, airstrips, marine vessel as well as aircraft and helicopter traffic. Together, these industrial facilities would cause: noise pollution from seismic testing, increased vessel traffic, and oil platform operations; increased likelihood of vessel strikes to marine mammals; transport of invasive species in ballast water or on the external surfaces of vessels and drilling rigs; and increased risk of pollution from oil and other contaminants associated with exploration and production. Many of these activities are occurring already. Seismic studies have been conducted in the Beaufort and Chukchi seas, and there are proposals to drill exploratory wells.

Oil production in the Arctic would also increase air pollution and contribute to global warming by producing soot. Soot consists of black carbon particles formed by the incomplete combustion of fuels, including flares that may be used to dispose of excess natural gas produced by oil wells. These black carbon particles contribute to a positive feedback loop that could accelerate warming in the Arctic. The soot may eventually settle on ice and snow, where it can dramatically accelerate melting during spring and summer, transforming surfaces that reflect sunlight back into the atmosphere into liquid water, which efficiently absorbs sunlight. The absorbed sunlight warms the water, which warms the surrounding region, causing faster permafrost melting and releasing stored greenhouse gases, such as carbon dioxide and methane, into the atmosphere. The release of these greenhouse gases, in turn, causes more snow and ice to melt, which causes more warming, and so on. This

positive feedback loop is amplified by the warming effect of the black carbon particles, which can accelerate the rate of warming across the whole planet. This increased warming, which disproportionately affects the Arctic, would place the marine ecosystems under commensurately increased stress.

While we know these ecosystems face large and rapid stress, our ability to measure these impacts is severely limited by the logistical challenges of sampling in this region and the paltry baseline data available. In such a situation, it is prudent to proceed cautiously and avoid adding additional stress to the system unless absolutely necessary. The current and proposed leasing in the Arctic do not meet either of these criteria. As discussed above, these activities will dramatically increase the stress on the region. In addition, reserves in the Beaufort and Chukchi lease areas would supply only a small fraction of the U.S. energy needs. Thus, their necessity is questionable, and these activities should not be considered in the absence of a comprehensive plan to move toward renewable energy and sustainable living.

V. Science-Based, Precautionary Management

On the 20th anniversary of the *Exxon Valdez* spill, we stand at a crossroads in the way the United States approaches energy and our oceans. As detailed above, we have learned much about the effects of oil in our oceans and the risks from offshore activities. At the same time, we know that we have a relatively poor understanding of the functioning of Arctic ecosystems and that we cannot effectively respond to or clean up an oil spill in the Arctic. While twenty years ago we might have pleaded ignorance, there is no excuse now for failing to address the risks and unknowns as we make decisions about our oceans.

For those reasons, we must stop the ongoing and planned leasing, seismic, and other activities in the Beaufort and Chukchi seas and Bristol Bay. Instead of rushing ahead in the absence of science and thorough planning, the federal government should develop a comprehensive Arctic conservation and energy plan based on a full scientific assessment of the health, biodiversity, and functioning of Arctic ecosystems to guide decisions about whether, when, where, and how industrial activities are permitted. Creating a comprehensive plan would begin with a gap analysis and research plan developed by independent scientists, such as the National Research Council. Further, the plan could be created in conjunction with broader climate and energy plans for America.

Such an approach has been started with regard to commercial fishing in the Arctic. In February 2009, the North Pacific Fishery Management Council (NPFMC) adopted a fishery management plan for the Beaufort and Chukchi seas. In recognition of the profound stresses on those ecosystems and our very limited knowledge of them, that plan precludes commercial fishing in U.S. Arctic waters until scientific evidence shows that such fishing can be conducted without harming the ecosystem or opportunities for the subsistence way of life. The plan was adopted unanimously and with support from scientists, industry, Native entities, and conservation groups. This "look before we leap" approach provides a model for addressing other proposed activities in the region.

Developing a comprehensive plan for the Arctic would involve coordinating expertise from a variety of sources including government agencies (such as NOAA, FWS, MMS, BLM, the Coast Guard, EPA), local governments, Native entities, scientists, and others. An interagency task force should be created to incorporate their expertise and actions related to the Arctic. This task force would oversee the creation and implementation of an Arctic conservation and energy plan and could be headed by a new position in CEQ or by the NOAA Administrator. As this process proceeds, local and traditional knowledge must play an important role.

Further, for any areas in which oil and gas activities are considered, we must ensure that they can be conducted without harming ecosystems or impacting the subsistence way of life. Doing so requires the best available technology and, at minimum:

a. Clear evidence that accidents can be controlled, contained and cleaned up;
b. Adequate response capabilities, including tugs, booms, equipment and trained on-site personnel;
c. Zero discharge of produced waters, drilling muds, or other byproducts;
d. Monitoring and tracking for all vessels and materials; and
e. Processes and procedures to protect marine mammals and other resources from the effects of seismic activities, noise, and other pollution;

A comprehensive, science-based plan for managing ocean resources and appropriate standards for any activities permitted are only one part of the equation. At the same time, we must work to develop alternative sources of energy, such as wind, and, we must provide incentives to conserve.

I live in Juneau, Alaska, a town of 31,000 people that is run almost entirely on hydropower. Last April, an avalanche severed the transmission line from our power source, forcing us to immediately switch to diesel-generated electricity and increasing costs by 500% overnight. Within a week, we lowered our consumption of electricity by over 30%. We did mainly this by reducing needless waste. No businesses closed, no one froze and, while the stores ran out of compact fluorescent light bulbs, life went on pretty much as normal. Even after the transmission line was fixed, our consumption rate has remained about 10% below what it was.

Through simple conservation efforts, the United States could achieve similar savings. Even a 10% reduction of petroleum consumption would remove nearly 2 million barrels of oil per day from the oil market, which would lower the price of gas much more quickly than the decades required for new oil reserves to come on-line. Besides lowering the price of gas for everyone, this relatively small conservation effort would improve our balance of payments, reduce our reliance on foreign sources of oil, and lower our emissions of carbon dioxide to the atmosphere. It would slow both global warming and ocean acidification, set a compelling example to the rest of the world, and preclude placing the last great biological strongholds in jeopardy from oil pollution. Were we to actually achieve a 30% reduction in fossil fuel use through conservation, the improvement in the atmosphere would be detectable within a year. Were we to augment the savings from conservation with a deliberate transition to alternative energy sources combined with more efficient ways of using energy, we could cut our carbon dioxide emissions in half much sooner than we currently think possible. Indeed, energy from offshore wind sources has the potential to replace fossil fuels for electrical power generation in much of the northeastern U.S. and southern California. We will still need fossil fuel generation if only for back-up supplies, but it does not have to be the dominant source of power generation. We must demonstrate the will and leadership to accomplish these goals. When I was young, we made a national commitment to go to the moon in ten years, and what we face today to change our power generation infrastructure is not nearly as technologically challenging.

VI. Conclusion

As I think back on the last twenty years, I am struck by cyclical nature of these events. Before the *Exxon Valdez* oil spill, we were told that oil development was safe and necessary. In the intervening decades, science has shown us that it is not. While we have made some progress in transport safety as well as response and rescue capability, we still cannot clean up a spill in Arctic waters, and we still do not understand those systems—let alone how they might be affected by industrial activities. Nonetheless, oil companies and others would have us believe that, this time, it will be fine. This time, we should be smart enough to recognize all that we don't know and all that we stand to lose.

For those reasons, we must stop all ongoing and planned activities offshore in Alaskan waters and begin the development of a science-based, precautionary conservation and energy plan for the Arctic that provides a bridge from oil to renewable energy and conservation. We also must reinstate and extend the moratoria on offshore drilling in U.S. waters. We owe it to ourselves and those whose lives depend on preventing a repeat of the *Exxon Valdez* oil spill.

Ms. BORDALLO. Thank you very much, Dr. Short.

And as Chair now I recognize Dr. Kathrine Springman to testify.

STATEMENT OF DR. KATHRINE R. SPRINGMAN, ASSISTANT EDITOR, MARINE ENVIRONMENTAL RESEARCH

Ms. SPRINGMAN. Thank you, Chairwoman Bordallo, Chairman Costa, and members of the committee.

I am a toxicologist who is here today to answer some of your questions about the biological effects——

Ms. BORDALLO. Is your microphone on?

Ms. SPRINGMAN. About the biological effects of oil-drilling. Other oil-producing nations, such as Norway, have established more stringent controls on oil exploration and production, and these have been codified and enforced.

Norway has a zero-discharge policy that has been in place for several years. Steidl Hydro, a Norwegian energy company, is the largest offshore oil and gas drilling company in the world, and operates within these requirements.

Prior to drilling, Norway requires that baseline data be collected. These data describe what the area under exploration was like prior to any exploration or extraction of resources, and these serve as a basis for comparison to evaluate the environmental performance of those who wish to drill.

Additionally, technologies to detect damages and assess their real or potential effects on wildlife are also available, and have been tested with oil. These technologies are another facet of what should be required.

The presence of risk requires monitoring on a regular, repeated basis. The precautionary principle bears repeating here. When an activity raises threats of harm to the environment or human health, precautionary measures should be taken, even if some cause-and-effect relationships are not fully established scientifically. In this context, the proponent of an activity, rather than the public, bears the burden of proof.

Thanks to methodical research in this area, we have learned a great deal about the effects of oil over some of the various time scales involved. Among the more salient points concerned, how oil can last in a form that is available for uptake by wildlife, and the type of damage that can result.

In a recently published study, fuel oil that was released in the 1964 Alaska earthquake was found by digging about 10 centimeters below the surface. This oil was capable of stimulating a pronounced enzymatic response in fish dosed with it.

Oil associated with organic-rich source rock, such as coal, has no effect, as the hydrocarbons associated with it cannot be taken up. Petroleum hydrocarbons from seeps do not travel far enough to affect any sampling or wildlife from sites that were used in this study, and any human effects were inconsequential.

Nonpoint-source pollution has been discussed as a primary source of coastal marine pollution. But that would depend on many of the same factors that impact the sensitivity of a site to drilling. It may be useful to examine the interactions of the various stressors found at specific coastal locations for both of these applications.

Identifying the risks involves in resource extraction prior to making a decision impacting numerous levels involves integrating knowledge and skills from various fields.

One of the problems here is that we are just now beginning to learn crucial details about the interactions and behavior of wildlife, and their interactions with their habitat, the effects of continuous, long-term hydrocarbon exposure, and the generational consequences of interactions with hydrocarbons.

Familiarity with the components of a system are necessary when assessing the potential risks. We are still acquiring the knowledge needed to make wise decisions having a long-range impact, and making them before the information to do so is available can have continuing effects for the areas in question and the wildlife in-

volved. This requires extended studies to examine these target sites, as the impact factors change.

Among the crucial points in this discussion is the length of time for which an impacted area and its resources will be affected by drilling. There are several factors to consider. Oil is a complex mixture of hundreds of compounds that degrade at different rates, and the composition varies with location. Petroleum hydrocarbons can manifest toxicity in various ways, on a range of time scales. These compounds can elicit toxic effects on an acute timeframe, as well as affect wildlife for decades in subtle ways.

Data strongly suggest that oil becomes more toxic on a volumetric basis as it ages, as those compounds that remain are among the most toxic. Many of these remaining compounds are among the list of probable human carcinogens. Their toxicity can be manifested in wildlife, as pronounced demographic changes in a wildlife of a region, and for long periods of time.

The time required for recovery from one large incident or chronic continuous exposure is uncertain, and depends on many factors.

In closing, many more factors are needed to be taken into consideration prior to allowing OCS drilling. Due to the variability of these issues, each zone should be considered separately to minimize the risk of damage to the areas involved.

I would be delighted to work with the committee in any way to implement new technologies and models for accurate assessments of drilling impacts. And thank you very much.

[The prepared statement of Ms. Springman follows:]

Statement of Kathrine Springman, Assistant Editor, Marine Environmental Research

Mr. Chairman and members of the committee: My name is Kathrine Springman, and I'm a toxicologist who is here today to answer some questions about the biological effects of OCS oil drilling.

Other oil producing nations such as Norway have established more stringent controls on oil exploration and production, and these have been codified and enforced. Norway has a Zero Discharge Policy that has been in place for several years. A copy of some of this material is attached for your review.

Prior to drilling, Norway requires that baseline data be collected. These data describe what the area under exploration was like prior to exploration or extraction of any resources, and serve as a basis for comparison to evaluate the environmental performance of those who wish to drill. One of the biggest stumbling blocks to assessing damage is the lack of baseline data. Additionally, technologies to detect discharges and assess their affects on wildlife are now available, and have been tested. These technologies are another facet of what should be required. The presence of risk requires monitoring on a regular, repeated basis.

Thanks to methodical research in this area, we have learned a great deal about the effects of oil over some of the various time scales involved. Among some of the more salient points concerned how long oil can last in a form that is available for uptake by wildlife, and the type of damage that can result. In a recently-published study, fuel oil that was released in the 1964 Alaska earthquake was found by digging about 10 cm below the surface. This oil was bioavailable and capable of stimulating a pronounced enzymatic response in fish dosed with it. Oil associated with organic-rich source rock such as coal had no effect, as the hydrocarbons associated with it cannot be taken up by wildlife. Petroleum hydrocarbons from seeps do not travel far enough to affect any sampling or wildlife from sites that were used in this study, and any human effects were inconsequential. Non-point source pollution has been discussed as the primary source of coastal marine pollution, but that would depend on many of the same factors that impact the sensitivity of a site to drilling. It may be useful to examine the interactions of the various stressors found at specific coastal locations for both of these applications.

Identifying the risks involved in resource extraction prior to making a decision impacting numerous levels involves integrating knowledge and skills from various

fields. One of the problems here is that we're just now beginning to learn crucial details about the interactions and behavior of wildlife and their interactions with their habitat, the effects of continuous, long-term hydrocarbon exposure, and the generational consequences of the interaction of hydrocarbons. Familiarity with the components of a system is necessary when assessing the potential risks. We're still acquiring the knowledge needed to make wise decisions having a long-range impact, and making them before the information to do so is available can have continuing effects for the areas in question and the wildlife involved. This requires extended studies to examine these target sites as the impact factors change. One of these is climate. Where climate changes, ecosystems will do the same. Their sensitivity to disruption may be one of the characteristics that alters.

Among the critical points in this discussion is the length of time for which an impacted area and its resources will be affected by drilling. There are several factors to consider: oil is a complex mixture of hundreds of compounds that degrade at different rates, and the composition varies with location. Petroleum hydrocarbons can manifest toxicity in various ways on a range of time scales. These compounds can elicit toxic effects on an acute time frame as well as affect wildlife for decades in subtle ways. Data strongly suggest that oil becomes more toxic on a volumetric basis as it ages as those compounds that remain are among the most toxic. Many of these remaining compounds are among the list of probable human carcinogens. Their toxicity can be manifested in wildlife as pronounced demographic changes in the wildlife of a region, and for long periods of time. The time required for recovery from one large incident or chronic, continuous exposure is uncertain, and depends on many factors including the definition of "recovery". This underscores the importance of baseline data prior to beginning any activity.

Another aspect to consider is that released oil is not the only concern in drilling. Drilling fluids and produced water can be toxic to wildlife when discharged, while drill cuttings can impact the characteristics of the receiving environment. Determining the risk depends on the quantity of the material discharged, its characteristics, the time over which the discharge takes place, the age of the production fields involved, the depth of the receiving area, the diffusion potential of the released material, the sensitivity of the receiving environment, and confounding factors such as hurricanes. Consequently, responsible stewardship requires that these differences be considered prior to permitting oil drilling in potentially sensitive areas. The Zero Discharge Policy prohibits discharges from sources other than sea water. Preventing pollution by refraining from it is a prudent policy.

In closing, many more factors need to be taken into consideration prior to allowing OCS drilling. Due to the variability of these issues, each site should be considered separately to minimize the risk of damage to the areas involved.

Ms. BORDALLO. Thank you very much, Dr. Springman.

And now I recognize Dr. Christopher Clark to testify for five minutes.

STATEMENT OF CHRISTOPHER W. CLARK, PH.D., I.P. JOHNSON DIRECTOR, BIOACOUSTICS RESEARCH PROGRAM, CORNELL UNIVERSITY LABORATORY OF ORNITHOLOGY

Mr. CLARK. Thank you, Chairwoman Bordallo and Chairman Costa, Ranking Members Lamborn and Brown.

It is with hope and some foreboding that I provide this testimony. I am here to convey these four important messages.

Marine animals—for example, whales, fishes, lobsters, and crabs—depend on sound and a clean acoustic environment to survive. Increasingly, human activities in the ocean are generating sounds that compete with the animals. Many marine habitats are now acoustically urbanized and industrialized.

In many areas there is so much acoustic smog and interference from human activities, that for all intents and purposes, the ocean's acoustic environment is bleached and cluttered with acoustic debris. There is now evidence that for whales, and probably for fish, human noise is both an acute and a chronic problem.

We do not understand the full scope of the ocean noise problem from human activities in the marine environment. We do not know the short-term or the long-term cost, the small-scale and large-scale impacts, or the cumulative effects from all this added noise combined with other stressors, as mentioned previously.

Last, I believe there are opportunities for finding sustainable solutions that are both ecologically responsible and economically viable.

I am an authority on the marine acoustic world as it pertains to the whales. I study such questions as how do whales use sound to communicate, how do they use it to survive. What are they saying, what are they listening to. And how do human activities impact their chances for survival.

Communication is a central part of human society. When our communication fails, as you all know, we suffer the consequences.

Whales are no different. They depend on communication to maintain their social bonds, to make new ones, to exchange messages, to convey information about food, predators, ocean tides, migrations, and mating opportunities. All the basics of life in an ocean world.

Sound in the ocean is the communication medium of necessity, especially if you must send your messages to the largest audience possible, or if you want to listen for threats.

There are no fish that are known to be deaf. There certainly are no whales or dolphins that are known to be deaf. If you want to survive in the ocean, you have to listen, and you have to produce sound.

As a result of human activities, ocean noise levels in some places have increased 100 to 1,000 times above what they were 50 to 60 years ago. This noise increase affects some of the quietest places on earth, such as the OCS of Alaska. These high noise levels significantly reduce the chances of whales to communicate.

On a very clear day, a blue whale, the largest animal ever to live on this planet, can see out as far as maybe the length of a football field. In contrast, on a very quiet day, that same whale can be heard as far away as we are now from Boston, and on an exceptionally quiet day, as far away as we are now from Miami. Those quiet days are now rare.

As illustrated in figure 1, which I provided, the area over which a blue whale could have communicated 60 years ago is now dramatically smaller. It is roughly 10 percent of what it could have communicated over when it was a teenager or a young adult.

We know that sounds associated with commercial activities, both exploratory and operational, inject large amounts of noise into the ocean. In many areas along our coastlines, the ocean is so noisy that if we applied OSHA standards, the whales would be required to wear ear protection. And I provided some scenes, acoustic scenes, of quiet and noisy ocean, and I could even play you sounds.

We can now quantify how changes in noise from our activities impact the abilities of whales to communicate. For example, in the Stellwagen Bank National Marine Sanctuary off Boston, places where whales aggregate to socialize and feed, average noise levels are so high that the whales have lost between 80 percent to 90 percent of their opportunities to communicate. Their society is being

constantly interrupted by the noises of ship traffic, 24 hours a day, 365 days a year.

What have the whales done about this? Well, first they raised their voices a little bit higher, but then they have now given up. The result is that they stop communicating. That means that the whales can't find mates, and they are having trouble finding food.

I believe it is possible to responsibly explore and exploit the OCS such that the acoustic world of marine mammals is respected and protected. As an example, I am going to show you, or I can tell you about, a collaboration between industry and scientific solutions and institutions. And this was brought up just previously by Ian Bowles, off Massachusetts, because that is where this was done.

Through a collaboration between universities and scientific industries, and with oversight from multiple Federal and state agencies, we have successfully implemented a marine acoustic observation network off Boston. You can go online and see it, it is real-time. This automated network allows LNG businesses to operate offshore, while protecting whales in a critical habitat.

In summary, I would emphasize, the critical need for comprehensive ocean planning, the importance of converting existing and future marine sanctuaries into true sanctuaries, the need for a comprehensive review of OCS resources, as has been mentioned before, and my sincere conclusion that sustainable solutions can and will be achieved by working together, doing cutting-edge science and getting the facts straight so that we collectively make the right decisions.

If we don't get the oceans right, our world is not sustainable.

Thank you very much for this opportunity to testify.

[The prepared statement of Mr. Clark follows:]

Statement of Christopher W. Clark, Ph.D., Senior Scientist, Neurobiology & Behavior, Cornell University, Director of the Bioacoustics Research Program, Cornell Lab of Ornithology

Thank you Chairman Costa, Chairwoman Bordallo, Ranking Members Lamborn and Brown, and other members of the Committee for holding these hearings and for inviting me to be here today to speak with you.

It is with hope and some foreboding that I provide this testimony.

I want to convey these important messages to you today:

1. Marine animals (e.g., whales, fishes, lobsters & crabs) produce and listen to sound. They depend on sound and a clean acoustic environment to survive.
2. Increasingly, human activities in the ocean are generating sounds that compete with the animals, so much so that many marine habitats are now acoustically urbanized or industrialized. In many areas there is so much acoustic smog and interference from human activities that for all intents and purposes the ocean's acoustic environment is bleached and cluttered with acoustic debris. There is now evidence that for whales, and probably for fish, human noise is both an acute and a chronic problem.
3. We do not understand the full scope of the ocean noise problem as a result of human activities in the marine environment. We do not know the short-term or long-term costs, the small-scale and large-scale impacts, or the cumulative effects from all this added noise combined with other stressors.
4. I believe there are opportunities for finding solutions that are both ecologically responsible and economically viable.

I am one of the world's foremost authorities on the marine acoustic world as it pertains to the large whales; the giants whose voices can be heard across an ocean basin. This is the acoustic world I understand very well. The primary focus of my scientific research is in marine mammal communication, with particular expertise in underwater sound and whale acoustic communication. I study such questions as: How do whales use sound to survive? What are whales saying? What are they listening to? How do human activities impact their chances of survival? Since 1982 I

have conducted multiple, highly collaborative scientific research projects to obtain data on acoustic impacts from Navy sonars, oil & gas activity sounds and commercial shipping noise. I have also devoted considerable effort to describing and understanding the spatial and temporal scales over which marine mammals communicate and how human activities are changing their marine acoustic environment. More recently, using my skills as an engineer and a biologist, I have helped build a functional collaboration between industry and scientific institutions, with oversight from multiple federal and state agencies, to implement a marine acoustic observation network off Boston (http://listenforwhales.org); this automated network allows LNG businesses to operate offshore while protecting whales in a critical habitat.

Communication is a central part of human society. It is woven into the fabric of our lives. We depend on our eyes and ears and voices to communicate. When our communication fails, we suffer the consequences.

Whales are no different. They depend on communication to maintain their social bonds, to make new ones, to exchange messages; to convey information about food, predators, ocean tides, migrations, and mating opportunities—all the basics of life in an ocean world.

If you live in the ocean one very big difference compared to living on land is that in the ocean light does not travel very far, but sound does. Sound in the ocean is the communication medium of necessity, especially if you must send your message to the largest audience possible or if you want to listen for threats. There are no fish that are known to be deaf. There are no marine mammals that are known to be deaf, and there certainly are no whales or dolphins that are known to be deaf.

As a result of human activities, ocean noise levels in some places have increased 100 to 1000 times above what they were 50 to 60 years ago. This noise increase affects some of the quietest places on earth, such as the OCS of Alaska, as a result of seasonal human activities such as O&G explorations. These high noise levels are now significantly reducing the chances for whales to communicate. This problem most likely applies to more than just whales. If time allows during this session I am prepared to present examples of what the ocean sounds like under these different quiet and noisy conditions.

Whales have lost significant portions of their acoustic habitats as a result of increased ocean noise.

On a very clear day a blue whale (the largest animal ever to live on this planet) can see out as far as the length of a football field. On a very quiet day that same whale can be heard as far away as we are now from Boston, and on an exceptionally quiet day as far away as we are now from Miami. Those quiet days are now rare. As illustrated here, the area over which a blue whale could have communicated 60 years ago is dramatically smaller today as a result of ocean noise.

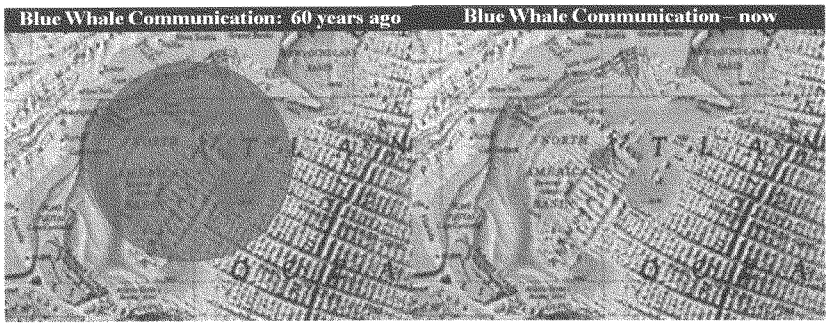

Figure 1. Schematic chart showing in red the area over which blue whales can communicate under quiet noise conditions (left) and under high noise conditions (right) as a result mostly of shipping traffic noise.

The impact of high ocean noise levels on whale communication can now be measured.

As the level of noise rises in the ocean, the ability to communicate falls. Thanks to an immense amount of basic and applied research, conducted or funded mostly by the Navy, we now have a very good idea of how sound travels and behaves in the ocean, so we can accurately and precisely predict how sound spreads through the ocean.

We know that sounds associated with commercial activities, both exploratory and operational, inject large amounts of noise into the ocean. So for example, in many

areas along our coastlines the ocean noise level is such that the habitat is now "urbanized" and in some places the noise level is so high that the habitat would qualify as "industrialized". At times, in fact, it is so noisy that if we applied OSHA standards the whales would be required to wear ear protection.

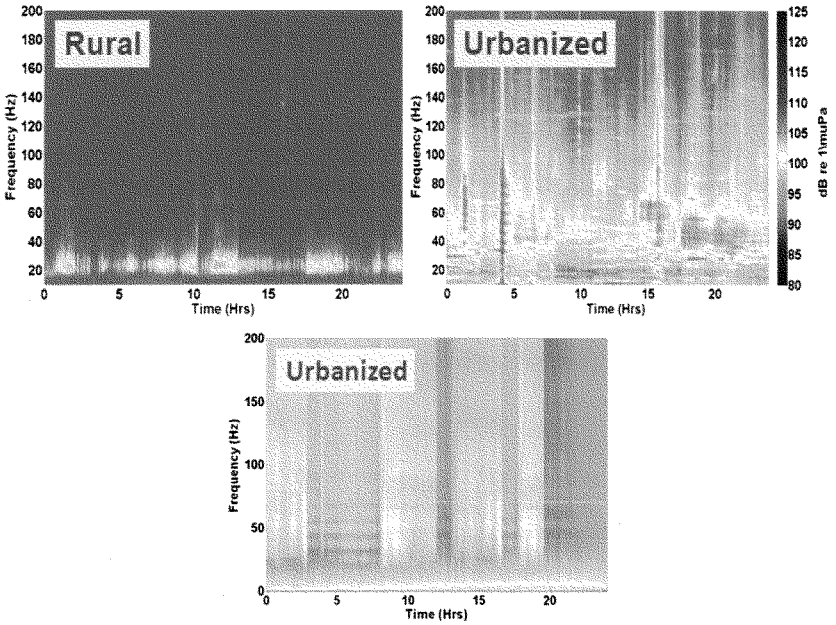

Figure 2. "Voice-print" type displays showing the differences between the acoustic environments in a rural ocean habitat and two urbanized ocean habitats. In the rural environment, the voices of whales are apparent as brightness in a deep blue background of quiet. In the urbanized environment examples, whale voices are lost beneath the intensity of shipping noise (top right) and exploration noise (lower).

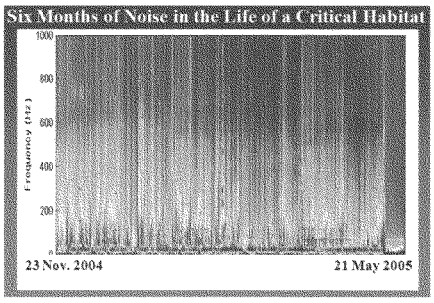

Figure 3. "Voice-print" type display showing the persistent intensity of shipping noise in Cape Cod Bay, MA, over a six month period. Whales were present and calling during this time period, but their voices were lost beneath the overwhelming intensity of shipping noise.

The North Atlantic right whale is one of the rarest whales on this planet. It inhabits the ocean from Maine to Florida. This population has experienced a dramatic loss in its acoustic habitat, and that loss results in a dramatic loss in communication.

We can now quantify how changes in noise from our activities impact the ability of whales to communicate. Thus, for example, in the Stellwagen Bank National Marine Sanctuary off Boston or in nearby Cape Cod Bay, places where whales aggregate to socialize and feed, average noise levels are so high that the whales have lost

between 80-90% of their opportunities to communicate. Their society is being constantly interrupted by the noises of ship traffic; 24h a day, 365 days a year. What have the whales done in response to all this noise? First, they raised the pitch of their voices to be twice as high as it was 20 years ago. Second the whales simply stop calling. The result is that the communication system is being constantly broken. This means that the whales can't find mates, and they have trouble finding food. These are not good indicators for survival.

There are things that can and are being done to reduce the impacts of offshore development on whales.

Can we responsibly explore and exploit the OCS such that the acoustic world that the whales and other marine animals depend on is respected and protected? Based on past performance, I have serious doubts, but I am an optimist. Furthermore, I have recently been engaged in a project that gives me hope. Through a functional collaboration between industry and scientific institutions, and with oversight from multiple federal and state agencies (e.g., Commerce, Transportation, USACE, USCG and MADMF) we have successfully implemented a marine acoustic observation network off Boston (http://listenforwhales.org); this automated network allows LNG businesses to operate offshore while protecting whales in a critical habitat.

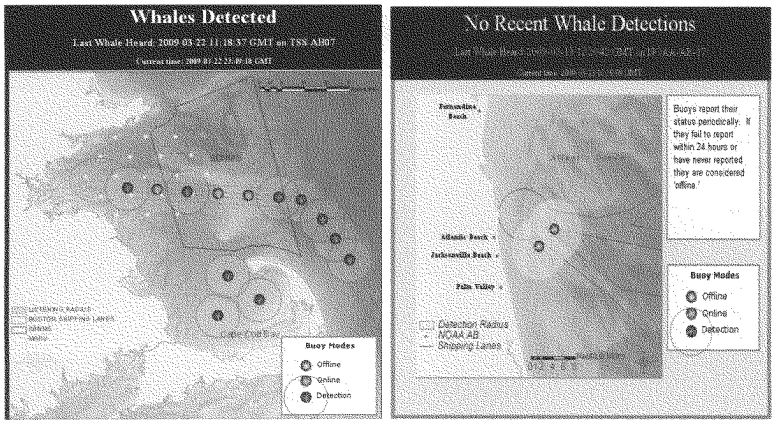

Figure 3. Charts showing the locations of listening buoys that are part of the operational whale detection and reporting network in the Boston shipping lanes and in Cape Cod Bay (left), and as part of a pilot project network straddling the shipping lane off Jacksonville, FL (right).

Before ending, I would like to state for the record my agreement with statements put forth by previous testimonies to this committee, and to add several extensions to those testimonies. These include:

1. The critical need for comprehensive ocean planning,
2. The importance of converting existing and future marine "sanctuaries" into true sanctuaries.
3. The need for a comprehensive review of OCS resources including a comprehensive cost-benefit analysis and objective assessment of long-term risks to ocean ecosystems.
4. The desperate need for increased scientific understandings of marine ecosystems over biologically meaningful scales; spatial, temporal and organism-based.
5. My sincere conclusion that solutions can and will be achieved by working together, doing cutting-edge science, and getting the facts straight so that we collectively make the right decisions.

Thank you very much for this opportunity to testify today on this important issue, and I welcome a constructive discussion toward real solutions.

Ms. BORDALLO. Thank you, Dr. Clark.

And the last witness we will recognize is Mr. Brad Gilman.

STATEMENT OF BRAD GILMAN, ON BEHALF OF MAYOR STANLEY MACK, MAYOR OF THE ALEUTIANS EAST BOROUGH, ALASKA

Mr. GILMAN. Thank you. Thank you for inviting the Aleutians East Borough Mayor, Stanley Mack, to present the perspective of the Aleutians East Borough on the proposed North Aleutian Basin oil and gas lease sale.

Mayor Mack is in Norway this week, researching Norway's experience with balancing the needs of fishing communities and the offshore oil and gas industry. He has asked me to present his testimony before your two Subcommittees.

The Aleutians East Borough stretches over 300 miles along the eastern side of the Aleutian Islands, and consists of the communities of Sand Point, Nelson Lagoon, King Cove, False Pass, Cold Bay, and Akutan, with a total number of residents just over 2600.

These communities are dependent on subsistence in commercial fishing, can only be accessed by plane or boat, and are situated among the most remote and rugged terrain in the United States.

A recent study by the State of Alaska's Department of Labor and Workforce Development labeled the Borough's residents among the most diverse in the state, consisting of a mix of native Aleuts, Asian and Pacific Islander, and Caucasian.

The 2000 census recorded unemployment rates as high as 33 percent in the region, with a poverty rate higher than the national average. The economic opportunities for the East Aleutian people are extremely limited, and are almost entirely dependent on commercial fishing, with salmon and cod as the most important fisheries.

The region doesn't have any tourism to speak of, and there are no mining, timber, or sport fishing industries. The East Aleutian fisheries must be healthy, may be healthy from a sustainability standpoint, but economically, it is a different situation.

In the late 1980s and early 1990s, ex-vessel prices for sockeye salmon, the region's most valuable salmon species, were well over two dollars a pound. They now hover at around 60 to 70 cents a pound, as a result of the increased competition from subsidized farm fish from overseas. Fuel prices in the region, at the same time, have gone up by nearly a factor of five in the same period. The East Aleutian fishermen are barely hanging on.

As a result, the Eastern Aleuts are losing many of our long-term residents. The population of school-age children has plummeted. Over the last 30 years, the borough communities of Unga, Belikofsky, Squaw Harbor, and Sanak have become ghost towns. Community abandonment is a very real issue to the Eastern Aleuts.

These changing economic circumstances have forced the borough to examine other economic opportunities, and to be as creative as possible in seeking them out.

We believe that the offshore oil and gas development in the North Aleutian Basin could produce two to three hundred jobs in our region alone. That would be a major factor in sustaining these communities economically.

The plan currently adopted by the Department of the Interior would permit oil and gas drilling in the North Aleutian Basin, pending completion of an environmental impact statement. As the

nearest local Alaskan Government to the lease sale area, the borough has been given cooperating agency status for purposes of the EIS process. Mayor Mack also serves on the Department of the Interior's OCS Advisory Committee.

The borough has been investigating the impacts of the OCS on fishing communities for over 25 years. In the 1980s, borough officials traveled to the Shetland Islands to discuss the impacts of OCS development on the local people. The borough also convened a symposium, which was attended by local governments from the north slope and other OCS-impacted areas.

Most recently, the Mayor has visited Norway to learn firsthand of the Norwegians in developing their offshore resources in a manner which protects fishermen and fishing communities. The Norwegians appear to have been able to allow the oil and gas industry to coexist with coastal residents dependent on the commercial and subsistence fishing industries.

In all of these situations, the borough asked local government officials for advice on how to best safeguard the region's fisheries and subsistence lifestyle. The borough's proposed mitigation measures have evolved over a 25-year stretch, based on the experience of diverse coastal communities.

Mayor Mack has submitted for the record the mitigation measures of the Aleutians' East Borough that we presented to the Minerals Management Service for the North Aleutian Basin sale. I would invite you to actually take a look at them; they are well thought out, they are on our website. They deal with the issue of fisheries inventory, baseline studies, mapping and charting of coastal habitat, and critical habitat nursery grounds.

A lot of the issues that we have heard discussed with the first panel are actually addressed in the borough's proposed mitigation measures.

The borough will be aggressive during the EIS process to ensure that these mitigation measures and environmental protections are built into the final plan for the North Aleutian sale. Concurrently, the borough will be pressing prospective bidders on the leases to guarantee the hiring of local residents and businesses.

Mr. COSTA. If the gentleman could please close.

Mr. GILMAN. Very good.

Mr. COSTA. Are you done?

Mr. GILMAN. Yes, I will stop there.

[The prepared statement of Mayor Stanley Mack follows:]

Statement of The Honorable Stanley Mack, Mayor, Aleutians East Borough, Alaska

Thank you for inviting Aleutians East Borough Mayor Stanley Mack to present the perspective of the Aleutians East Borough on the proposed North Aleutian Basin oil and gas lease sale. Mayor Mack is in Norway this week researching Norway's experience with balancing the needs of fishing communities and the offshore oil and gas industry. He has asked me to present his testimony before your two Subcommittees.

The Aleutians East Borough stretches over 300 miles along the eastern side of the Aleutian Islands and consists of the communities of Sand Point, Nelson Lagoon, King Cove, False Pass, Cold Bay, and Akutan, with a total number of residents just over 2,600. These communities are dependent on subsistence and commercial fishing, can only be accessed by plane or boat, and are situated among the most remote and rugged terrain in the United States.

A recent study by the State of Alaska's Department of Labor and Workforce Development labeled the Borough's residents among the most diverse in the state, consisting of a mix of Native Aleuts, Asian & Pacific Islander, and Caucasians. The 2000 Census recorded unemployment rate of 33 percent in the region, with a poverty rate higher than the national average. The economic opportunities for the East Aleutian people are extremely limited and are almost entirely dependent on commercial fishing, with salmon and cod as the most important fisheries. The Region doesn't have any tourism to speak of and there is no mining, timber or sport fishing industry.

The East Aleutian fisheries may be healthy from a sustainability standpoint, but economically it is a different situation. In the late 1980s and early 90s, ex-vessel prices for sockeye salmon, the Region's most valuable salmon species, were well over $2.00 a pound. They now hover at around 60 to 70 cents a pound as result of increased competition from subsidized farmed fish from overseas. Fuel prices in the region at the same time have gone up by nearly a factor of 5 in that same period. The East Aleutian fishermen are barely hanging on.

As a result, the East Aleutians are losing many of our long-term residents. The population of school age children has plummeted. Over the last 30 years, the Borough communities of Unga, Belikofsky, Squaw Harbor and Sanak have become ghost towns. Community abandonment is a very real to the Eastern Aleuts. These changing economic circumstances have forced the Borough to examine other economic opportunities and to be as creative as possible in seeking them out.

The plan currently adopted by the Department of the Interior would permit oil and gas drilling in the North Aleutian Basin, pending completion of an Environmental Impact Statement. As the nearest local Alaskan Government to the lease sale area, the Borough has been given Cooperating Agency status for purposes of the EIS process. Mayor Mack serves on the Department of the Interior's OCS Advisory Committee. The Borough has been investigating the impacts of the OCS on fishing communities for over twenty-five years. In the 1980s, Borough officials traveled to the Shetland Islands to discuss the impacts of OCS development on the local people. The Borough also convened a symposium which was attended by local governments from the North Slope and other OCS-impacted areas. Most recently, the Mayor has visited Norway to learn firsthand the experience the Norwegians in developing their offshore resources in a manner which protects fishermen and fishing communities. The Norwegians appear to have been able to allow the oil and gas industry to co-exist with coastal residents dependent on the commercial and subsistence fishing industries. In all of these situations, the Borough asked local government officials for advice on how to best safeguard the region's fisheries and subsistence lifestyle. The Borough's proposed mitigation measures have evolved over a twenty-five year stretch based on the experience diverse coastal communities.

Mayor Mack would like to submit for the record the mitigation measures that the Borough has presented to the Minerals Management Service for the North Aleutian Basin sale. The Borough will be aggressive during the EIS process to ensure that these mitigation measures and environmental protections are built into the final plan for the North Aleutian sale. Concurrently, the Borough will be pressing prospective bidders on the leases to guarantee the hiring of local residents and businesses.

Opponents of the North Aleutian Basin sale have mislabeled it as "stopping drilling in Bristol Bay." The Bristol Bay communities are roughly 200 miles away. The Aleutians East communities are the closest ones to the sale and would be most affected by any accident. Statements and comments in the media make it sound like the sale is opposed by "Bristol Bay", as if the region is one singular body that speaks with one voice. That is not the case. In fact, the Bristol Bay Borough and Lake and Peninsula Borough, the two area governments, have passed resolutions supporting inclusion of the North Aleutian Basin into the 5 year OCS Plan with proper mitigation. The Bristol Bay Native Corporation and the Aleut Corporation, representing many area Alaska natives, are also in favor of moving the process forward. The right approach is to allow MMS to complete the EIS process. The Aleutians East Borough will ultimately support the sale if MMS agrees to measures to protect fisheries and the environment.

Thank you for allowing the Aleutians East Borough to testify before you today.

Proposed Mitigation Measures for OCS Leasing In the North Aleutian Basin [1]

Fisheries Protection

Lease related use will be restricted to prevent conflicts with local commercial, subsistence, and sport harvest activities. All OCS operations, both onshore and offshore, must be designed, sited and operated to ensure that:

(a) adverse changes to the distribution or abundance of fish resources do not occur;
(b) fish or shellfish catches are not adversely impacted by OCS activities;
(c) all exploration, construction and operation activities will be coordinated with the fishing community to maximize communication, ensure public participation, and avoid conflicts;
(d) ballast water treatment is required to remove or eliminate non indigenous species.
(e) fishermen are not displaced or precluded from access to fishing areas, unless they are adequately compensated for the displacement;
(f) fishermen are not precluded from participating in designated fishing seasons, unless they are adequately compensated for the lost season(s); and
(g) fishermen will be compensated for damage to fishing equipment, vessels, gear and decreased harvest value from OCS operations in a timely manner.

NOAA Fisheries must complete a baseline fisheries assessment prior to commencement of OCS exploration. NOAA Fisheries must review and approve all exploration and development activities under the leases issued in collaboration with local, state and federal agencies, and implement federal monitoring programs to ensure these fish resource standards are met.

Transportation, Utility Corridors and Infrastructure Siting

Transportation routes, utility corridors and infrastructure must be carefully sited and constructed to allow for the free passage and movement of fish and wildlife, to avoid construction during critical migration periods for fish and wildlife. Pipelines should be buried wherever possible. The siting of facilities, other than docks, roads, utility or pipeline corridors, or terminal facilities, will be prohibited within one-half mile of the coast, barrier islands, reefs and lagoons, fish bearing waterbodies and 1500 feet from all surface water drinking sources.

Coastal Habitat Protection

Offshore operations must use the best available oil spill prevention and response technologies to prevent oil spills from adversely impacting coastal habitat, and to rapidly respond to oil spills. Geographic response strategies must be used to protect environmentally and culturally sensitive sites.

Local Hire and Training

OCS Operators will be required to submit a local hire and training program prior to any exploration, production or permitting activity, which provides a description of the operator's plans for partnering with local communities to recruit and hire local residents, local contractors, and local businesses and a training program to prepare local residents to be qualified for oil and gas jobs for exploration and development activities within their region.

Air Pollution

Best available emission control technology will be required for all industrial sources of air pollution, including criteria air pollutants and hazardous air pollutants.

Water Pollution

A zero water pollution discharge will be required for all industrial operations.

Marine Mammals and Essential Habitat

All onshore and offshore facilities and OCS-support vessel and air craft routes must be carefully sited to avoid marine mammal and essential habitat impacts.

Social Systems

All onshore and offshore facilities must be carefully sited, designed and operated to avoid adverse social system disruptions and impacts. OCS Operators must:

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[1] The proposed mitigation measures are in addition to the lease stipulations listed in the OCS DEIS for the Alaska Region, and to replace the Fisheries Protection stipulation which AEB has determined to be inadequate.

(a) Minimize impacts on residential areas, privately-owned surface lands and native allotments;
(b) Provide utilities, support services and expand other community infrastructure, and services as needed to support their OCS development and associated local population increases; and
(c) Communicate with local residents, interested local community groups, and especially fishing organizations.

Good Neighbor Policy

All OCS Operators, operating off the Aleutian East Borough coastline, should be required to adopt a Good Neighbor Policy that is appropriate for this region. AEB's Good Neighbor Policy requires OCS Operators to work with the AEB to provide cost effective fuel, power, transportation, medical services, emergency and other services to the local communities. AEB's Good Neighbor Policy also required OCS Operators to provide a compensation system to minimize disruptions to subsistence activities and provides resources to relocate subsistence hunters and fishermen to alternate areas or provide temporary supplies if a spill affects the taking of subsistence resources.

Cultural and Historic Site Protection

OCS Operators must protect all existing cultural and historic sites and notify the local government as soon as possible about the discovery of prehistoric, historic and archaeological sites. The notification must describe what was discovered and how the area will be preserved. A final project report shall be submitted to the local government.

Seismic Design

All onshore and offshore facilities must be designed to the Seismic Zone IV, Uniform Building Code design standard for the Aleutian Chain.

Mr. COSTA. All right. We have a five-minute rule. I know it is a little disconcerting.

We have been changing chairmanships up here. I had to go speak on the Floor, but we do really appreciate when you stick around the five minutes. As a matter of fact, I have been known to give points for those who stay under five minutes.

But we do appreciate your written testimony. And please, Mr. Gilman, please give Mayor Mack our regards. We appreciate your being here to testify on his behalf.

Now it gets to the part where I think many Members get an opportunity to really ask questions or make comments. It is the part that I enjoy most.

Dr. Springman, Dr. Short, and Mr. Gilman, I understand, but correct me if I am wrong, that you support policies that require zero discharge from drilling operations. Is that correct?

Mr. SHORT. That is substantially correct, yes. For my part.

Ms. SPRINGMAN. For my part, I do, depending on where they are discharged and the characteristics of the discharge site.

Mr. COSTA. Well, and Mr. Gilman, do you want to comment? Yes or no. I mean, we don't have to——

Mr. GILMAN. Yes. We have it in our mitigation.

Mr. COSTA. All right. Well, I mean, I don't think any of us want to see any discharges. But when we understand what the, the primary causes of pollution are, I mean, it is just like people want zero risks on certain impacts on food contamination, or zero risks from driving one's automobile. I mean, there just aren't zero risks in life. And I just think it is a standard that, while allowable to try to gain, we can, as the EPA, as opposed to chasing parts per million, parts per billion, and parts per trillion, at some point becomes de minimis, I would think.

Dr. Clark, I am curious about the automated observation network that you have helped implement near Boston for the LNG industry to minimize impacts. Are there lessons that we can use that for other experiences on the issue of OCS?

Mr. CLARK. Yes, sir, I believe there are. One of the lessons learned for me, since I am an academic, was the learning the language and the nuances and the motivations of industry. I have worked with, at this interface for a long time, but in this case it was recognizing that everybody at the table wanted to find a solution.

In most cases, what I brought to the table, they didn't understand what my point was, and I didn't understand what theirs was. And once we sat down and said we agree that there is a problem, let us figure out the problem, and let us come up with a solution, it was actually fairly straightforward.

And so we have the technology in many cases, and it is a matter of developing it and applying it responsibly. And in this case, through oversight by the Federal government and the State of Massachusetts, this is what happened. So we actually built the thing.

Mr. COSTA. Yes, when you get the different parties who have differences, different interests, sit in the same room, oftentimes you can find paths to solutions to the issues that you are dealing with. That is the bottom line, right?

Mr. CLARK. Yes. Could I ask another thing?

Mr. COSTA. Sure, quickly.

Mr. CLARK. So we are talking with ExxonMobil, Conoco Philips, Shell, all these industries that want to do the right thing. And once they think about it from a business plan, and they build this mitigation process into the business plan, the problem is, that is the major step in the problem.

Mr. COSTA. Yes. And in that sense, you think we can decrease the impact of seismic surveys, which I think are important?

Mr. CLARK. You think it is important to decrease the seismic——

Mr. COSTA. No, no. I said I think seismic surveys are important to do the inventory. I think it is a critical tool.

Mr. CLARK. That is correct, right.

Mr. COSTA. But I am asking you, can we decrease the impact of the, the adverse impact on the seismic surveys?

Mr. CLARK. Absolutely.

Mr. COSTA. OK, good, good. Before my time has expired, Captain Colburn, I am a big fan. I didn't get a chance to introduce you. I was looking for it. But I, on the Discovery Channel, have seen the incredible challenging work you and your crews and your fellow captains do in pursuing the deadliest catch, as they say.

How many years have you been performing your work on the coastal areas of Alaska?

Mr. COLBURN. Twenty-four years would be the time I have spent in Alaska. I have spent my entire fishing career working in the North Aleutian Basin.

Mr. COSTA. And what would you observe are the primary differences over that 24-year period?

Mr. COLBURN. Primarily, I would say that the biggest differences are the fleets consolidated. We have seen efficiency gains in the fleets across the board.

Mr. COSTA. Do you think we are doing a better job managing the ocean resources in your neck of the woods?

Mr. COLBURN. I think the science-based management that is used in the Alaska fisheries is phenomenal. I believe the managers have done a great job learning from the mistakes in other areas, and have managed to balance harvest versus——

Mr. COSTA. Your catch measurably over that period of years, 24 years, has remained about the same, increased, or decreased?

Mr. COLBURN. Crab-specific or fishery-specific?

Mr. COSTA. Fisheries, generally.

Mr. COLBURN. Fisheries? Right now, pollock stocks are a little off, but they reached record highs within the last four years. The crab stocks right now are similar to levels in the close to the late seventies. They are very prolific and healthy right now.

The opilio stocks right now are very healthy. Beardie, which was closed for 10 years, is now reopened. Cod is healthy. I would say across the board, the fisheries are healthy. But, you know, we have obstacles ahead of us.

Mr. COSTA. I understand. I have a couple more questions I would like to ask you, but I will try to see if I can get it in the second round. I don't want to impinge on other folks' time. And if I am not able to, I will submit them to you, as it relates to Valdez and the new exploration areas.

The gentleman from Colorado, Ranking Member of the Subcommittee on Energy and Minerals, Mr. Lamborn.

Mr. LAMBORN. Sir, thank you. Mr. Gilman, thank you for your testimony today. I am sorry that the Mayor couldn't be here.

But you mentioned that the borough has been investigating the impacts of offshore drilling on coastal communities for over 25 years. Many of the communities are currently dependent on fishing for their livelihoods.

Do you think the two activities are compatible? And if so, what makes you more confident of this than some of the other witnesses?

Mr. GILMAN. We do think, the Mayor does think that there are compatible uses. We originally supported the lease sale 92 in the 1980s, and then when the Exxon Valdez spill occurred we withdrew that support.

We had a number of villages within 20, 25 miles of the lease sale area, and they were, they were distraught over the impacts of the Exxon Valdez. So the borough pulled back and decided rather than to pursue their support of OCS, that they would instead begin to educate themselves further. And they went to the Shetland Islands; they met with local people.

They asked them basically, if you had it to do all over again, what would you try to accomplish. And the answer was that there needs to be more involvement, more local government involvement at the very beginning of the planning process, at the very beginning of the governmental process, so that the people that live in the area have some feeling of empowerment as it unfolds.

And they have spent 15 or 20 years learning oil and gas technology, developing their regulatory structures locally so that they have some local control over these developments. A few people don't understand is that oil and gas in the North Aleutian Basin is going to have to cross borough lands. There are no deepwater

ports on the north side of the Alaska Peninsula. It has to be piped to the south side, to the Gulf of Alaska side, where, frankly, the risk of spill is greater on the south side of the peninsula than it would be on the north side. Because——

Mr. LAMBORN. What kind of lands did you call those?

Mr. GILMAN. Sorry?

Mr. LAMBORN. What kind of lands did you call those?

Mr. GILMAN. The lands? Borough lands.

Mr. LAMBORN. Oh, borough lands.

Mr. GILMAN. County lands, our version of county. They are going to have to cross our county.

So we have some local control over the permitting process, because the pipeline is going to have to be permitted or the development can't occur.

So we do believe that the Minerals Management Service and the industry will respect the proposals that the borough developed over the last 15 years, which are in your folder.

Mr. LAMBORN. OK. Thank you for that answer, and please give our regards to the Mayor.

Mr. GILMAN. You are welcome.

Mr. LAMBORN. Dr. Short, the development of extended-reach slant drilling allows for greater development from shore of our OCS resources. Do you support the expansion of onshore drilling using that method, which goes out under the OCS for development?

Mr. SHORT. If it is a question of that versus location of a drilling rig offshore, yes. That is a much safer way to access coastally accessible oil deposits. And the Liberty field I believe is currently the only offshore oil deposit that is in the Beaufort currently being exploited, and it is being exploited that way. So, yes.

Mr. LAMBORN. OK, thank you. I appreciate that.

Dr. Clark, what would be the impact of windmills on the acoustic atmosphere of the ocean?

Mr. CLARK. A great question. I have actually looked at this in reading the EISs relative to Cape Wind, and the Norwegian, and the Netherlands situations. And my conclusion is that not much of anything.

One of the things that you have to realize in terms of the acoustic impact, the greatest, highest period of chronic or, sorry, acute impact is during the actual development. So when you are seismic profiling, that is when the highest levels of noise, and when you are putting a monopole into the ground to build a windmill, that is when the highest impact is. But it is quite self-contained. Once it is operational, the noise component relative to whales is almost insignificant, in my opinion.

Mr. LAMBORN. OK. I want to thank you all for being here. We appreciate your testimony today.

I yield back to Mr. Chairman.

Mr. COSTA. Thank you, the gentleman from Colorado.

The gentlewoman from Guam, the Chairman of the Subcommittee, Mr. Bordallo.

Ms. BORDALLO. Thank you. Thank you very much, Mr. Chairman.

Dr. Clark, I have a question for you. You testified that we really don't know the cumulative effects of noise in the oceans on marine

animals, particularly when combined with other stressors. So you also mentioned that industry wants to do the right thing as part of their business plan.

Well, how can we address this lack of knowledge, while also trying to give industry the tools to do the right thing, and minimize the impacts that any new energy development would have on marine animals?

Mr. CLARK. That is an amazing question. And to answer it—and I am not being facetious; that is a very important and deep question. And I will try my best in the short amount of time.

First of all, you need to prioritize what it is we don't know, and what that ignorance, how that impacts and constrains our ability to identify risk.

So there are a lot of things we don't know. And sometimes we can spend our time and resources on stupid things, as opposed to going after the smart things. And that is what we have to agree on, is what is the rate-limiting piece of knowledge that we need to know?

And I don't think it takes very long for a group of scientists and knowledgeable people, as well as getting full engagement with the representatives from government, state, and industry, to come down to conclusions. And we are doing those kinds of workshops right now.

And it also depends highly on where you are going to do the activity. And in most cases, if you say you are going to go off Angola, or you are going to go off Gabon, or you are going to go off Madagascar or Brazil or one of those places, in most cases we don't actually have an inventory, a biological inventory, of what is there.

So our biggest area of ignorance is we don't know what is there, why it is there, and when it is there. And I call this acoustic or biological prospecting.

So some of those things can be done ahead of time, and they are not all that expensive. And they can be done in a timely fashion.

Thank you.

Ms. BORDALLO. Thank you. It has been very helpful, Dr. Clark.

Dr. Short, several witnesses at our hearings have discussed oil seeps and the amount of pollution these natural sources contribute to the ocean, relative to manmade sources, such as spills or other accidents.

Would you care to comment on that issue?

Mr. SHORT. It is true that natural seeps are the largest source of oil going into the ocean worldwide. But it is very patchily distributed.

In North America, perhaps 60 percent of the oil entering the marine environment comes from seeps. On the West Coast, almost all of that comes from the Santa Barbara seeps off California.

Ms. BORDALLO. What is the percentage there?

Mr. SHORT. I don't have it off the top of my head, but I will get it for you. It is on the order of 80 or more percent.

In Alaska and the south coast of Alaska, far less, well under seven barrels a day seep into the ocean on a coastline equivalent from Boston to northern Florida.

We wish we knew where oil seeps were in the rest of the state. And that really underscores a major message I would like to con-

vey, that we have, as Dr. Clark also mentioned, we have very little knowledge of what is even out there in Alaska.

The Arctic in particular is one of the places in the world where we don't even have a very good inventory of what is there, when it is there, when it migrates, et cetera.

When we first did the first big round of offshore leasing in the United States, it was accompanied by the Outer Continental Shelf Environmental Assessment Program that was a very comprehensive effort in Alaska to determine what biological resources were at risk. It didn't get up to the Arctic very much, because the Arctic was so inaccessible. We really need another program like that explicitly on the Arctic, particularly now that it is more accessible and about to be developed.

Ms. BORDALLO. I have a followup, either with you or Dr. Springman. Would you say that the seeps are as hazardous as industrial spills?

Mr. SHORT. The seeps are far less hazardous than industrial spills. One of the things about seeps is that they are slow, they are steady, and biological communities have adapted to them. Whereas industrial spills hit the environment all at once; it has very little time to adapt, and the communities often suffer catastrophic results.

Ms. BORDALLO. Thank you. My time is up, and I yield back.

Mr. COSTA. I thank the gentlewoman.

The gentleman from Louisiana, Mr. Cassidy.

Mr. CASSIDY. Instead of saying boroughs, you should have said parishes. I would have understood that completely. Let us talk English here.

[Laughter.]

Mr. CASSIDY. That said, Ms. Springman, it often seems—Dr. Springman, I am sorry—it almost seems as though if you want to have everything ruled out for generations, we have an existential anxiety.

We can't prove a negative. We can't prove that there is going to be no 30-year effect of having a spill someplace, correct? I mean, we could in 30 years, but then what about 40, and what about 50?

Ms. SPRINGMAN. Well, you can't prove that a spill will or won't happen in a particular area. But you can prove that it won't happen where no drilling is being performed.

Mr. CASSIDY. Well, no. Well, we could say that we are going to have no offshore oil production whatsoever, and then we will have to import our oil. But I think what we have learned is, from the testimony, that there is more damage from tankers than there is from offshore drilling.

Now, so, and from what Dr. Short just said, it is actually the one-time spill of an offshore tanker, I mean of a tanker disruption, that seems more difficult to manage than the gradual seepage from natural sources, or the rare seepage from a rig.

So are you just saying that we shouldn't have any oil at all coming from offshore or being imported on tankers?

Ms. SPRINGMAN. Actually, what I am saying is that before any type of drilling takes place, the characteristics that can impinge and affect the risk of that site should be taken into account. All of them. Not just what is there as far as the gas, oil resources that

are available, but also the depth, the diffusion potential, the life forms that are there——

Mr. CASSIDY. I gathered that, and I would agree with that. I am sorry, in your testimony it seemed like we should know the Nth degree of the toxicological effect.

Dr. Clark, before Hurricane Katrina we used to have a home in the Mississippi Gulf Coast, and now we have a slab. But we used to go out in our boat, and we used to see dolphins cavorting alongside our boat.

And so, as I listened to your testimony, which I, you know, I am just trying to understand, I am not trying to be confrontational; and I also know that rigs in the Gulf of Mexico have lots of fisheries around them. That is where the sports guys go if they want to, and gals go to pick up the fish.

So I didn't understand how the mammal dolphin or the fish would not be bothered by the motorboat or the sounds of the rig. I mean, sound like this acoustic noise is of great concern, and yet they seem to congregate where there is an increased amount of noise. That is what I am asking.

Mr. CLARK. Yes, these are good questions. When I am talking about the noise, I am talking more about a chronic issue. And the majority of noise issue that I am talking about chronically has to do with ocean shipping. So the hundredfold to thousandfold rise in noise conditions in the ocean is by and large a result of ocean shipping noise, not from some activity like a motorboat riding around.

I agree with you, I have had the thrill of being out in a boat, and had bow-riding whales and things like that.

Mr. CASSIDY. So that would not necessarily, so what you are arguing for is not so much against offshore drilling; you are arguing against bringing in tankers full of oil.

Mr. CLARK. I am actually not arguing against anything. I am——

Mr. CASSIDY. OK, I get it.

Mr. CLARK. I am merely pointing out the facts.

Mr. CASSIDY. But the relative risk benefit, the greater risk would be with the shipping, and less with the offshore drilling.

Mr. CLARK. Correct. We are the, the concern for me relative to ocean noise, anthropogenic noise, and marine mammals and fishes and invertebrates, is actually with the seismic exploration period. Which actually is a very strong, high-intensity sound being injected into the water repeatedly for months at a time.

Mr. CASSIDY. Got you. Dr. Short, your concerns—and folks from your organization have been here before, and I respect you all's work—your concern has been about the impact of drilling on oceans, et cetera.

But again, I keep on making the point, that if you look at the NOAA reports, the Flower Garden Coral Reefs in the Mississippi/Texas area are actually fairly healthy. And yet there is this incredible intensity of rig activity in the Western Gulf.

And the thought occurred to me, maybe because there is so much activity, there is that much more policing. Maybe the problem isn't the rig activity, it is the absence or presence of policing. And in which case, paradoxically, rigging, putting rigs out there may actually benefit preservation of things such as flower gardens.

I say that because Mr. Cousteau came and said the reefs are terrible off the coast of France. As far as I know, they don't develop oil and gas off the coast of France.

I would just like your comments on that, please.

Mr. SHORT. Well, as I am sure you are aware, oil floats. And the coral reefs and the flower gardens are 80 feet deep. So it is difficult for oil pollution to affect them, being so far down.

Mr. CASSIDY. So isn't the rigs per se, it isn't the drilling activity per se, but rather it is the oil on the top of the water that affects it?

Mr. SHORT. In the case of an accident. And the other impact comes from disposal of produced water when it occurs accidentally or routinely. And in that case, that water is hypersaline, which means it is very dense, and usually loaded with contaminants. And it sinks to the bottom of the sea floor.

Mr. CASSIDY. Now, the nice thing I heard from Ms., Dr. Springman—I am sorry, Doctor; I am a doctor, too, and no one calls me Doctor any more, I apologize—is that you actually in Norway apparently have a system in which that is minimized. And so that, actually going back to what the Chairman and Dr. Clark said, is that you can actually achieve this sort of environmental minimal footprint.

Thank you very much. I yield back. We are out of time.

Mr. COSTA. I will allow you a quick response, but the gentleman is out of time.

Mr. SHORT. I would just like to point out that in the Arctic and Alaska, all of the oil produced by pipeline goes into a tanker. And so it is contributing directly to tanker traffic.

Mr. COSTA. Where it comes to California, most of it.

The Chair will entertain a second round if the Members promise to be somewhat quick and efficient in their time. And I will try to set the example here with a couple quick questions.

In fact, Captain Colburn, have you noticed 20 years we are celebrating—not celebrating—we are recognizing 20 years of the tragedy of the Valdez spill. How would you say the area there has cleaned up? Your observations?

Mr. COLBURN. The observations——

Mr. COSTA. As a fisherman.

Mr. COLBURN. As a fisherman?

Mr. COSTA. Yes.

Mr. COLBURN. The Prince William Sound herring fishery has not recovered at all.

Mr. COSTA. It has not.

Mr. COLBURN. Yes. It is depressed. They attempted to open it, a limited opening a few years back, and there was no success rate whatsoever. The fish have literally left the area. The few that have remained are seriously prone to disease or carrying disease. And ultimately, it has affected the marine food web there.

Mr. COSTA. I see.

Mr. COLBURN. Herring is a vital source of food in that area.

Mr. COSTA. And with the expansion of OCS leases last year for Minerals and Management Services, and the discussion up in the Bering Sea, what is your take on that, as a person that depends

upon the resource and the culpability of maintaining multiple uses of the oceans?

Mr. COLBURN. I am terrified. I mean, I have seen the crab stocks completely disappear without explanation, concurrent with seismic testing. I mean, we are talking about sounds that are, you know, enough to deafen a man. I mean, literally, depth charges of sound being blasted to the bottom, and hundreds of thousands of those. That would just be stage one.

I mean, throughout the entire process you are looking at infrastructure——

Mr. COSTA. OK, I promised to be quick. I want one other question here.

Dr. Springman, you had talked about the toxicity of drilling fluids from oil and gas operations. Have you done any comparative analysis between the toxicity of those petroleum products versus other impacts with other kinds of either point-source or nonpoint-source discharges into the ocean?

Ms. SPRINGMAN. I have not done any comparative analysis between non point-source pollution. But that would also depend on the site where you are assessing non point-source pollution, and to see the site where you are assessing drilling mud, essentially.

Mr. COSTA. No, I understand. Do you know of any comparative analyses that have been done?

Ms. SPRINGMAN. Not off the top of my head, but I can get that information for you.

Mr. COSTA. All right, appreciate that.

I am going to defer. I took two minutes and 22 seconds, although I have more questions. Oh, our other two gentlemen left. OK, all right.

You are in the hot seat, and we will close the hearing. The gentlewoman from Guam.

Ms. BORDALLO. Thank you. Thank you very much, Mr. Chairman, Dr. Clark.

I have a followup on our earlier discussion. The idea of doing biological inventories to assess risk, do you think the industry representatives you have been working with would support doing this kind of planning up front as part of a comprehensive energy strategy?

Mr. CLARK. Yes, I do, Madame. We have actually had, and we are having, these discussions. And I am encouraged by the notion that being, what is the slogan, saving tomorrow today? That is, being up front now, getting—and it is much, as you know, it is much less expensive to do the right thing now than to wait for et cetera, et cetera.

And I could give you, or maybe you have access to the numbers in terms of the amount of time and resources spent on litigation, et cetera, et cetera. Whereas we could use those resources and time to actually get answers that help address the real questions that we are, I think we are all in agreement we want to do it right. And we need to do it sooner rather than later.

Ms. BORDALLO. Right, very good. Thank you. Captain Colburn, at one of our hearings we had a witness who testified about how well fisheries and oil and gas coexist in the Gulf of Mexico. And that

the rigs were actually a boon for fishermen, because they acted as artificial reefs.

So do you think the same kind of benefits might occur in areas that you are familiar with?

Mr. COLBURN. Absolutely not. The Bering Sea is a completely different habitat. It is literally a windswept plain; it is not a reef-based system.

To introduce artificial reefs I would say would be unnatural. To encourage diverse fish I would say would be encouraging invasive species. I don't think it would work.

Ms. BORDALLO. Thank you. Thank you for your answer. And that concludes my questioning, Mr. Chairman.

Mr. COSTA. Well, thank you. You were under three minutes. I will give you points

No, I want to thank the Chairwoman and her Subcommittee and the staff and our staff, for working together on this joint hearing. I think we got some productive work done this day.

And I also want to thank the witnesses, both on panel 1 and panel 2, for your due diligence and your testimony, and your efforts to answer the questions as best you can.

We want to acknowledge the Members of both Subcommittees today and their staffs. We, I think, put all of you on notice under the rules, that Members may have 10 days to submit further questioning. And we hope if there are further questions, we will get those to you, and that you will get them back to the committee in a timely fashion.

The hearing record will be held open for 10 days for the responses. And if there is no further business—yes.

Ms. BORDALLO. Mr. Chairman, just quick. I would like to thank the witnesses, particularly panel 2. This hearing lasted three hours, and we thank you for your patience and understanding.

Thank you, Mr. Chairman. It has been a delight working with you.

Mr. COSTA. Always. Thank you, Madame Chairwoman. We have a little bit of a love fest here going. We want to thank everybody for being here.

And if there is no further business, the two Subcommittees will now adjourn.

[Whereupon, at 1:05 p.m., the Subcommittees were adjourned.]

[Additional material submitted for the record follows:]

[The prepared statement of Mrs. Capps follows:]

Statement of The Honorable Lois Capps, a Representative in Congress from the State of California

Thank you, Chairwoman Bordallo and Chairman Costa, for holding this important hearing that considers if offshore energy development can coexist with healthy oceans. This hearing is particularly timely given that today is the 20th anniversary of the Exxon-Valdez oil spill.

Thank you also to our esteemed witnesses for travelling here to talk about these important topics.

The Exxon-Valdez oil spill devastated the ecosystem of Prince William Sound—killing wildlife, destroying habitat, and threatening the health and economic wellbeing of Alaska's residents. The damaging effects of this spill can still be seen today.

In my own community, I witnessed firsthand the devastation of the Platform A blowout in 1969. This disastrous spill created an 800 square-mile slick and marred 35 miles of California's coastline.

And we continue to suffer at the hands of an industry that contributes to our local air, water, and noise pollution. Every year, thousands of cargo ships, including many oil tankers, some that are foreign-flagged, single-hull vessels, move through the Santa Barbara channel.

This issue is critical to me and my constituents. Our coastal economy and fragile marine environment cannot tolerate even one more accident.

This committee has already held three important and informative hearings on the impacts of offshore oil and gas drilling on the environment and coastal communities.

Everyone knows that I have been a long-time opponent of new offshore oil and gas development.

It is clear that given our country's deep and dangerous dependence on foreign oil, we do need to harness energy offshore, but in the form of renewable resources.

However, we need to make sure that this development is done wisely and in an environmentally-sound manner.

I will soon introduce a bill, entitled the Coastal State Renewable Energy Promotion Act, which will provide grants to states to survey the coastline to identify areas suitable for renewable energy development.

I believe that these sorts of scientific assessments and marine spatial planning are crucial to the successful development of our renewable energy resources. By implementing these surveys, we can provide certainty for the industry, while ensuring that we are protecting the environment and serving the public good.

Thank you again for calling this hearing and I look forward to the testimony from our knowledgeable witnesses. I am eager to learn what more Congress can do to promote environmentally-friendly and people-friendly renewable energy development.

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