AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

S. HRG. 112–440

Senate Hearings

Before the Committee on Appropriations

Energy and Water Development Appropriations

Fiscal Year 2012

112*th* CONGRESS, FIRST SESSION

H.R. 2354

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

VerDate Nov 24 2008 17:29 Dec 28, 2012 Jkt 064597 PO 00494 Frm 00001 Fmt 5009 Sfmt 5009 U:\2012HEAR\10HEAR\GRNCVR.TXT 64597

Energy and Water Development Appropriations, 2012 (H.R. 2354)

VerDate Nov 24 2008 17:29 Dec 28, 2012 Jkt 064597 PO 00494 Frm 00002 Fmt 6019 Sfmt 6019 U:\2012HEAR\10HEAR\GRNCVR.TXT 64597

S. HRG. 112–440

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2012

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

UNITED STATES SENATE

ONE HUNDRED TWELFTH CONGRESS

FIRST SESSION

ON

H.R. 2354

AN ACT MAKING APPROPRIATIONS FOR ENERGY AND WATER DEVELOPMENT FOR THE FISCAL YEAR ENDING SEPTEMBER 30, 2012, AND FOR OTHER PURPOSES

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

Printed for the use of the Committee on Appropriations

Available via the World Wide Web: http://www.gpo.gov/fdsys/browse/committee.action?chamber=senate&committee=appropriations

U.S. GOVERNMENT PRINTING OFFICE

64–597 PDF WASHINGTON : 2012

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2104 Mail: Stop IDCC, Washington, DC 20402–0001

COMMITTEE ON APPROPRIATIONS

DANIEL K. INOUYE, Hawaii, *Chairman*

PATRICK J. LEAHY, Vermont
TOM HARKIN, Iowa
BARBARA A. MIKULSKI, Maryland
HERB KOHL, Wisconsin
PATTY MURRAY, Washington
DIANNE FEINSTEIN, California
RICHARD J. DURBIN, Illinois
TIM JOHNSON, South Dakota
MARY L. LANDRIEU, Louisiana
JACK REED, Rhode Island
FRANK R. LAUTENBERG, New Jersey
BEN NELSON, Nebraska
MARK PRYOR, Arkansas
JON TESTER, Montana
SHERROD BROWN, Ohio

THAD COCHRAN, Mississippi, *Ranking*
MITCH McCONNELL, Kentucky
RICHARD C. SHELBY, Alabama
KAY BAILEY HUTCHISON, Texas
LAMAR ALEXANDER, Tennessee
SUSAN COLLINS, Maine
LISA MURKOWSKI, Alaska
LINDSEY GRAHAM, South Carolina
MARK KIRK, Illinois
DANIEL COATS, Indiana
ROY BLUNT, Missouri
JERRY MORAN, Kansas
JOHN HOEVEN, North Dakota
RON JOHNSON, Wisconsin

CHARLES J. HOUY, *Staff Director*
BRUCE EVANS, *Minority Staff Director*

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

DIANNE FEINSTEIN, California, *Chairman*

PATTY MURRAY, Washington
TIM JOHNSON, South Dakota
MARY L. LANDRIEU, Louisiana
JACK REED, Rhode Island
FRANK R. LAUTENBERG, New Jersey
TOM HARKIN, Iowa
JON TESTER, Montana
RICHARD J. DURBIN, Illinois
DANIEL K. INOUYE, Hawaii *(ex officio)*

LAMAR ALEXANDER, Tennessee
THAD COCHRAN, Mississippi
MITCH McCONNELL, Kentucky
KAY BAILEY HUTCHISON, Texas
RICHARD C. SHELBY, Alabama
SUSAN COLLINS, Maine
LISA MURKOWSKI, Alaska
LINDSEY GRAHAM, South Carolina
DANIEL COATS, Indiana

Professional Staff

DOUG CLAPP
ROGER COCKRELL
FRANZ WUERFMANNSDOBLER
CAROLYN E. APOSTOLOU *(Minority)*
TYLER OWENS *(Minority)*
LASHAWNDA SMITH *(Minority)*

Administrative Support

MOLLY BARACKMAN-EDER

VerDate Nov 24 2008 17:29 Dec 28, 2012 Jkt 064597 PO 00494 Frm 00004 Fmt 5904 Sfmt 5904 U:\2012HEAR\10HEAR\GRNCVR.TXT 64597

CONTENTS

WEDNESDAY, APRIL 13, 2011

	Page
Department of Defense—Civil: Department of the Army: Corps of Engineers—Civil	1
Department of the Interior: Bureau of Reclamation	18

WEDNESDAY, MAY 4, 2011

Deparment of Energy: National Nuclear Security Administration	91

WEDNESDAY, MAY 18, 2011

Department of Energy	125
Material Submitted Subsequent to the Hearing	199

NONDEPARTMENTAL WITNESSES

Department of Defense—Civil: Department of the Army: Corps of Engineers—Civil	201
Department of Energy	224
Department of the Interior: Bureau of Reclamation	308

VerDate Nov 24 2008 17:29 Dec 28, 2012 Jkt 064597 PO 00494 Frm 00005 Fmt 5904 Sfmt 5904 U:\2012HEAR\10HEAR\GRNCVR.TXT 64597

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2012

WEDNESDAY, APRIL 13, 2011

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

The subcommittee met at 2:10 p.m., in room SD–192, Dirksen Senate Office Building, Hon. Dianne Feinstein (chairman) presiding.

Present: Senators Feinstein, Johnson (SD), Landrieu, Reed, Lautenberg, Harkin, Tester, Alexander, Cochran, Collins, Murkowski, and Graham.

DEPARTMENT OF DEFENSE—CIVIL

DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS—CIVIL

STATEMENT OF HON. JO-ELLEN DARCY, ASSISTANT SECRETARY OF THE ARMY (CIVIL WORKS)

OPENING STATEMENT OF SENATOR DIANNE FEINSTEIN

Senator FEINSTEIN. The hearing will come to order.

I would like to apologize for being late. I thought I would tune in to the President's address, that there would be some specifics and after a while I thought uh-oh, I better go to the hearing. So here I am, and I want to thank everybody here for being patient.

I want to welcome our witnesses. I happen to be a big fan of the Army Corps of Engineers (COE), and particularly all the dredging, the levee protection, the river protection, everything that you do in California to enable us to exist is critical.

Mike Connor, who is the Commissioner of the Bureau of Reclamation (BOR) has done excellent work. I am a big fan in what is a tough area in California. No adage has ever been truer than "whiskey is for drinking and water is for fighting", and California puts that into action every year. So I thank you for being a problem-solver rather than a problem-maker.

We all recognize, I think, the difficult fiscal environment we are in. However, we also realize that our economy is fragile, still recovering, and could turn the wrong way, so we want to do our very best to see that those agencies that stimulate economic and job growth and protect the safety of our communities are themselves protected.

VerDate Nov 24 2008 17:29 Dec 28, 2012 Jkt 064597 PO 00494 Frm 00007 Fmt 6633 Sfmt 6633 U:\2012HEAR\10HEAR\10AP13COE-BOR.TXT 64597

COE and BOR are the agencies we depend on to build the water infrastructure that moves our Nation's cargo, protects our cities from flooding, provides irrigation water and hydropower, and facilitates much needed environmental restoration. Not only does the work of these agencies provide jobs now, the infrastructure that is constructed continues to benefit the economy for decades. It is amazing.

Unfortunately, the budget request reflects the consistent underfunding that we have seen in prior years, and I must say I am very disappointed in our part of the continuing resolution which takes another whack at COE.

The President's fiscal year 2012 budget for COE is $4.6 billion. That is 15 percent below the 2010 enacted amount. Two major project accounts for the Department of the Interior under the jurisdiction of this subcommittee are proposed at $1.05 billion, which is 7 percent below the fiscal year 2010 enacted amount. That is a lot. So this is a tough budget for both agencies.

For COE, the top six construction projects account for $737 million of the $1.48 billion requested for construction work. That is 51.8 percent of the total. The other 79 construction projects—79—compete for the remaining 48 percent of funds.

In the general investigation account, 75 percent of the funding is directed to national programs and two individual studies. The other 63 studies proposed will have to compete for 25 percent of the funds.

In BOR's budget, I am pleased to see the administration propose a new account for the San Joaquin River restoration. The $9 million in discretionary funding, along with the mandatory funding under the joint settlement agreement between the Federal Government, the State, and the water contractors will assure that water impacts are reduced or avoided while maintaining the San Joaquin River ecosystem.

Rural water projects are funded in both the water and related resources account and the proposed new Indian water rights account for fiscal year 2012. There are seven ongoing rural water projects proposed at $35.5 million from the water and related resources account for 2012. All of these benefit various tribes. The new Indian water rights account proposes $51.5 million for four similar new projects. One has to wonder whether these funds can be effectively used for these new rural water systems in fiscal year 2012. That will be something for us to look into.

So I want to welcome Jo-Ellen Darcy, the Assistant Secretary of the Army (Civil Works), Lieutenant General Robert L. Van Antwerp, the Chief of Engineers for the United States Corps of Engineers. And from the Department of the Interior, we will hear from Anne Castle, the Assistant Secretary for Water and Science, and the wonderful Mike Connor, Commissioner of the Bureau of Reclamation.

Now before formally introducing you, I would like to indicate my great pleasure in introducing my ranking member for this. We worked together on the Interior Committee and it was very easy to do. We were able to work out any issue, and you are really a gentleman, Lamar, and in this arena that is doubly appreciated.

You get double points. So I thank you for being you, and I am delighted to recognize you for your remarks.

STATEMENT OF SENATOR LAMAR ALEXANDER

Senator ALEXANDER. Thank you, Madam Chairman. It is a treat to work with you. Thank you for the compliment. What I especially like about Senator Feinstein is she was a mayor. She can make decisions and she speaks with precision. So it is easy to work with her. And we have many of the same values and judgments about the future of our country.

Senator Feinstein said that whiskey is for drinking and water is for fighting in the West, and all across our country, I think all of us are here today because we know that inland waterways and locks are for creating private sector jobs. And that is really the number one goal we have got in this country no matter where we are from.

I want to thank the chair for holding this hearing and thank all the distinguished leaders of the Departments for coming. COE has been around since the Revolutionary War. It touches the lives of every American, keeps our inland waterways open and running, manages our drinking water, provides emission-free electricity, looks after recreational waters, and as Tennesseans found out last year during our flood, helps us manage river levels during serious flooding. It does many things well, but we want to be in a position to help COE do things even better and jobs are a good place to start.

The Nation's inland waterways do not get on the front pages as much, but they keep trucks off our highways. They result in lower fuel costs at a time when fuel is going up. They reduce the cost of repairing roads. Barges can carry a ton of freight 576 miles on a gallon of fuel compared to the 150 miles per gallon a truck can carry a ton of freight. And one barge of dry cargo can displace as many as 70 trucks, putting that freight on our waterway and taking it off our crowded interstate.

We think of the Chickamauga Lock in the Chattanooga area of Tennessee. If it were to close, which it has a real risk of doing if it is not replaced, it would put 100,000 big trucks on I–75. If COE is committed to mothball projects, it would expand the amount of freight on our waterways. In fact, the only inland waterways project COE has prioritized is years past its planned completion date, hundreds of millions of dollars over budget, with still no end in sight. We have to find a solution that expands our current locks and gets new ones built.

One of the things that I want to talk about today when my question time comes is that industry, commercial users, came to COE in good faith in 2008, attempted to find a solution to put more money in the Inland Waterways Trust Fund, only to have COE appear to walk away from the documented help draft and condemn the report's findings. I would like to have some answers about why that happened. What could have been a great example about how industry and Government could work together turned out to be a cautionary tale about a fickle Government dealing with an industry.

So the questions, Madam Chair, that I will be asking are how do we fix the trust fund and make sure that projects like Chickamauga Lock get built. Are we doing all we can to utilize our ports and harbors? We need to examine how we are managing the Harbor Maintenance Trust Fund. The President said his goal in the State of the Union Address was to double exports. It is going to be hard to do unless we provide adequate funding for dredging our ports and harbors. And then what are the specific factors driving decisionmaking on COE projects? We need to ask for detailed examinations and explanations of how decisions are made and the process by which certain projects are deemed priorities.

This is an important hearing. I am glad to be a part of it. And I look forward to hearing from the witnesses.

Thank you, Madam Chair.

Senator FEINSTEIN. And I thank you, Senator.

From the Department of the Interior, we will hear from Anne Castle, the Assistant Secretary for Water and Science.

General Antwerp, it is my understanding that this is going to be your last appearance before the subcommittee as you will be retiring next month. So you can give us the true, unvarnished truth, as you see it.

We will expect nothing less. I want to thank you for your many years of service to our Nation. I look forward to working with your successor, General Bostick, once he is confirmed.

I want to remind the witnesses that your full statements will be in the record, and I hope you will just provide a brief summary of what you are saying. And then we will go the early bird rule, and I will alternate sides in recognizing Senators.

Senator COCHRAN. Madam Chairman, could I ask unanimous consent that a statement appear at this point in the record?

Senator FEINSTEIN. You certainly may, and all statements will be put in the record.

[The statement follows:]

PREPARED STATEMENT OF SENATOR THAD COCHRAN

Madam Chairman, thank you for convening this hearing to review the administration's fiscal year 2012 budget request for the Army Corps of Engineers (COE) and Bureau of Reclamation. I am pleased to join you in welcoming the panel for attending today's hearing.

My State is fortunate to border such prominent bodies of water as the Mississippi River and the Gulf of Mexico, which are both vital to our domestic economy for shipping and travel. Our relationship with the Corps of Engineers has enabled Mississippi and its neighboring States to benefit from access to these waters while also benefiting from COE-built levees, dams, and locks which safeguard against floods. COE has also been very helpful over the years in helping Mississippi address many of its aging wastewater infrastructure issues throughout our State. Flood control, port dredging, and environmental infrastructure projects are very important to our State, and we appreciate your responding to these needs.

The fiscal year 2012 proposal for the Mississippi River and its tributaries has caused concern among commodity exporters who worry about COE's ability to maintain the Mississippi River channel at authorized depths. The Mississippi River System enables more than $100 billion in exports to traverse its waters annually. Thousands of jobs rely on a fully functioning river system, and I hope COE will continue to respond to these national and local interests.

I look forward to your testimony, and to working with you during the coming year.

Senator FEINSTEIN. Secretary Darcy, would you begin please?

SUMMARY STATEMENT OF JO-ELLEN DARCY

Ms. DARCY. Madam Chairman and distinguished members of the subcommittee, thank you for the opportunity to present the President's fiscal year 2012 budget for the civil works program of COE.

The budget requires new appropriations of $4.631 billion. In keeping with the administration's program to put the Nation on a sustainable fiscal path, this is $836 million, or about 15 percent, below the 2010 enacted amount of $5.445 billion. It is about a 6 percent reduction from the 2011 budget for the civil works program.

The budget concentrates funding primarily in the three civil works program areas: commercial navigation, flood and coastal storm damage reduction, and aquatic ecosystem restoration.

The 2012 budget continues the Army's commitment to a performance-based approach to budgeting in order to provide the best overall return from available funds in achieving economic, environmental, and public safety objectives.

The budget provides $50 million for a comprehensive levee safety initiative to help ensure that Federal levees are safe and to assist non-Federal entities as they address safety issues with their own levees.

The operation and maintenance program also includes a new environmental and energy sustainability program to reduce energy consumption at COE projects and buildings.

The 2012 budget places priority on collaboration with other Federal agencies in the development of funding allocations for aquatic ecosystem restoration. For 2012, this collaboration is reflected in five major ecosystems:

—the California Bay-Delta;
—Chesapeake Bay;
—the Everglades;
—the Great Lakes; and
—the gulf coast.

The budget provides for use of $758 million from the Harbor Maintenance Trust Fund to maintain coastal commercial navigation channels and harbors.

The administration plans to develop legislation to expand the authorized uses of the Harbor Maintenance Trust Fund so that its receipts are available to finance the Federal share of other efforts in support of commercial navigation through our Nation's ports. No decisions have been made yet on what additional costs would be proposed to be paid from this Harbor Maintenance Trust Fund.

Inland waterways capital investments are funded in the budget at $166 million, of which $77 million is financed from the Inland Waterways Trust Fund. This is the total amount that is affordable in 2012 with the current level of revenue coming into the trust fund. The administration will work with the Congress and stakeholders to authorize a new mechanism to increase the revenue paid by commercial navigation users of the inland waterways.

The administration also plans to work with the Congress and stakeholders to explore ways to support broader recapitalization of COE's aging infrastructure, modification of its operations, or de-

authorization as appropriate, consistent with our modern day water resources principles and priorities.

Last year, President Obama established the America's Great Outdoors initiative to promote innovative community-level efforts to conserve outdoor spaces and to reconnect Americans to the outdoors. The Civil Works recreation program is closely aligned with the goals of the America's Great Outdoors initiative and includes a variety of activities to reconnect Americans, especially our young people, with the Nation's outdoor resources.

We continue to strengthen COE's planning expertise, including through greater support for our planning centers of expertise and continued support for the development of revised water project planning principles and guidelines.

A number of lower-priority programs and activities receive reduced or no funding in our 2012 budget. For example, funding for maintenance of navigation harbors and waterway segments that support little or no commercial use is reduced by about one-half. Also, no funding is provided for small projects in several of the continuing authorities programs. The budget proposes to reprogram $25 million of prior year funds from these lower-priority programs to finance ongoing phases of projects in higher-priority continuing authorities programs.

In summary, the President's budget for 2012 for the Army Civil Works program is a performance-based budget. It supports water resources investments that will yield long-term returns for the Nation.

Madam Chairman and members of the subcommittee, I look forward to working with you in support of the President's budget.

PREPARED STATEMENT

And if you would indulge me for about 30 seconds, I would like to personally thank General Van Antwerp for his years of service. I came into this job a year and a half ago and I could not have asked for a better partner and a better leader for COE, and he will be sorely missed. So thank you.

[The statement follows:]

PREPARED STATEMENT OF JO-ELLEN DARCY

Madam Chairman and distinguished members of the subcommittee, thank you for the opportunity to present the President's budget for the Civil Works program of the Army Corps of Engineers (COE) for fiscal year 2012.

OVERVIEW

The fiscal year 2012 budget for the Civil Works program reflects the administration's priorities through targeted investments in the Nation's infrastructure that help restore the environment and revitalize the economy, while also reflecting the need to put the country on a fiscally sustainable path. With those tenets in mind, the primary objectives of the budget are as follows:

—Focus funding on water resources infrastructure projects that produce high economic and environmental returns to the Nation and those that address public safety needs.
—Restore high-priority ecosystems such as the California Bay-Delta, Chesapeake Bay, the Everglades, the Great Lakes, and the gulf coast.
—Support a comprehensive levee safety initiative to help ensure that Federal levees are safe and to enhance efforts to assist non-Federal parties to address safety issues with their levee systems.
—Provide priority funding to the maintenance of high-performing projects.

—Propose changes in the way Federal activities in support of commercial navigation through the Nation's ports are funded, and support increases in inland waterways receipts.
—Improve the way in which COE addresses the Nation's most pressing water resources challenges.
—Increase the organizational efficiency and improve the management, oversight, and performance of ongoing programs.

The budget concentrates funding for development and restoration of the Nation's water and related resources within the three main Civil Works program areas:
—commercial navigation;
—flood and coastal storm damage reduction; and
—aquatic ecosystem restoration.

Additionally, the budget supports hydropower, recreation, environmental stewardship, and water supply services at existing water resources projects owned or operated by COE. Finally, the budget provides for protection of the Nation's regulated waters and wetlands; cleanup of sites contaminated as a result of the Nation's early efforts to develop atomic weapons; and emergency preparedness. The budget does not fund work that should be the responsibility of non-Federal interests or other Federal agencies, such as water and wastewater treatment projects.

FISCAL YEAR 2012 DISCRETIONARY FUNDING LEVEL

The budget provides gross new discretionary funding of $4.631 billion, which will keep the Civil Works program moving forward to help revitalize the economy, and provide for restoration and stewardship of the environment. The budget also proposes cancellation of the $57 million in unobligated funding previously provided in the Mississippi River and Tributaries account for construction of the Yazoo Backwater Pumps, Mississippi project. This cancellation would achieve $57 million in real savings for the American taxpayer. Of the amount proposed to be cancelled, $22 million is an offset to fiscal year 2012 gross appropriations, for a net request of $4.609 million. (The Congress appropriated the remaining $35 million to "restore" funds that COE had "borrowed" under the Stafford Act while responding to a natural disaster at another project. Because the Congress restored these funds in an emergency supplemental appropriation, their cancellation does not "score" as an offset to our discretionary funding request.)

In keeping with the administration's program to put the Nation on a sustainable fiscal path, the funding for Civil Works in the 2012 budget is $836 million, or about 15 percent, below the enacted amount of $5.445 billion in fiscal year 2010. It is about 6 percent below the fiscal year 2011 budget level. The fiscal year 2012 funding level reflects a considered, practical, effective, and sound use of available resources, focusing on those investments that are in the best interest of the Nation.

Within the $4.631 billion recommended gross appropriations, $1.48 billion is for projects in the Construction account, and $2.314 billion is for activities funded in the Operation and Maintenance (O&M) account. The budget also includes $104 million for Investigations; $210 million for Mississippi River and Tributaries; $27 million for Flood Control and Coastal Emergencies; $196 million for the Regulatory Program; $109 million for the Formerly Utilized Sites Remedial Action Program; $185 million for the Expenses account; and $6 million for the Office of the Assistant Secretary of the Army (Civil Works). Attachment 1 shows this funding by account and by program area.

ATTACHMENT 1.—FISCAL YEAR 2012 BUDGET—BUSINESS LINE/ACCOUNT CROSS-WALK

[In millions of dollars]

Business Lines	Funding Categories												
	I	C	O&M	MR&T				FUSRAP	FCCE	REG	E	OASA (CW)	TOTAL
				I	C	O&M	TOTAL MRT						
Flood and Coastal Storm Damage Reduction	48	721	523	1	63	91	155	.....	.....	.....	.....	.....	1,447
Coastal	7	23	8	.....	.....	3	3	.....	.....	.....	.....	.....	41
Inland	41	698	515	1	63	88	152	.....	.....	.....	.....	.....	1,406
Hydropower	.....	6	176	.....	.....	.....	.....	.....	.....	.....	.....	.....	182
Navigation	18	283	1,237	.....	13	24	37	.....	.....	.....	.....	.....	1,575
Coastal	7	117	706	.....	.....	2	2	.....	.....	.....	.....	.....	832
Inland	11	166	531	.....	13	22	35	.....	.....	.....	.....	.....	743
Environment:													
Aquatic Ecosystem Restoration	38	470	23	.....	2	.....	2	.....	.....	.....	.....	.....	533
Stewardship	.....	.....	96	.....	.....	4	4	.....	.....	.....	.....	.....	100
FUSRAP	.....	.....	.....	.....	.....	.....	.....	109	.....	.....	.....	.....	109
Regulatory	.....	.....	.....	.....	.....	.....	.....	.....	.....	196	.....	.....	196
Recreation	.....	.....	247	.....	.....	12	12	.....	.....	.....	.....	.....	259
Emergency Management (incl. NEPP)	.....	.....	7	.....	.....	.....	.....	.....	27	.....	.....	.....	34
Water Supply	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	5
Expenses	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	185	.....	185
OASA(CW)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	6
TOTAL	104	1,480	2,314	1	78	131	210	109	27	196	185	6	4,631

I=Investigations; C=Construction; O&M=Operation and Maintenance; MR&T=Flood Control, Mississippi River and Tributaries; FUSRAP=Formerly Utilized Sites Remedial Action Program; FCCE=Flood Control and Coastal Emergencies; REG=Regulatory Program; NEPP=National Emergency Preparedness Program; E=Expenses; OASA (CW)=Office of the Assistant Secretary of the Army (Civil Works).

The fiscal year 2012 budget continues the Army's commitment to a performance-based approach to budgeting to provide the best overall return from available funds from a national perspective in achieving economic, environmental, and public safety objectives. Competing investment opportunities for studies, design, construction, and operation and maintenance were evaluated using multiple metrics, and objective performance criteria guided the allocation of funds.

The fiscal year 2012 budget supports investments in flood and storm damage reduction, commercial navigation, environmental restoration, and other programs. The distribution of funding among these programs is similar to the distribution in the fiscal year 2011 budget, except that environmental restoration received a slightly lower proportion of overall funding. Of the total in the fiscal year 2012 budget, 31 percent is allocated to flood and storm damage reduction; 34 percent is allocated to commercial navigation; 18 percent is allocated to environmental restoration and protection; and 17 percent is allocated among other program areas.

NEW INVESTMENTS IN FISCAL YEAR 2012

The Civil Works budget includes funding for two construction new starts and several other new initiatives, as described below.

In the Construction account, the budget includes $8 million for a new start for the Hamilton City project in California, which provides environmental restoration and flood damage reduction benefits. The budget also includes $3 million to initiate a storm damage reduction project along the New Jersey coast between Raritan Bay and Sandy Hook Bay in the Port Monmouth area.

There are four new study starts in the Investigations account: Fish Passage at Englebright and Daguerre Point Dams on the Yuba River in California for $100,000; environmental restoration and flood damage reduction at Cano Martin Pena in Puerto Rico for $100,000; the Chesapeake Bay Comprehensive Plan for $250,000; and the Louisiana Coastal Area Comprehensive Plan for $100,000.

The O&M program includes $12.3 million for a new environmental and energy sustainability program. This will involve developing tools to enable COE to meet Federal sustainability goals and implementing energy-saving measures at COE projects and buildings. The 38 Civil Works COE districts will compete for these funds by proposing specific measures to conserve energy. Lessons learned from this competition will inform future investments to increase environmental and energy sustainability of the Civil Works program.

The budget provides $50 million for a comprehensive levee safety initiative. This initiative includes $46 million in the O&M account to continue and expand activities to help ensure that Federal levees are safe and to assist non-Federal entities to address safety issues with their levees. The levee safety initiative also includes $4 million in the Flood Control and Coastal Emergencies account. These funds will be used for COE participation in the expansion of interagency teams, known as Silver Jackets, to include every State, and to provide unified Federal assistance in implementing flood risk management solutions.

AQUATIC ECOSYSTEM RESTORATION

The fiscal year 2012 budget places priority on collaboration with other Federal agencies in the development of funding allocations for aquatic ecosystem restoration. Attachment 2 provides a list of the ecosystems and funding amounts budgeted on this basis.

FISCAL YEAR 2012 PRIORITY ECOSYSTEMS FUNDING

[In millions of dollars]

Ecosystem account	Projects and studies	Amount
	California Bay Delta:	
I [1]	Yuba River Fish Passage (new recon)	0.10
I	San Pablo Bay Watershed Study	0.50
C [2]	Hamilton City (new start)	8.00
I/C/O&M	Additional studies and projects in Navigation and Flood Damage Reduction Programs	49.00
	Total, California Bay Delta	58.00
	Chesapeake Bay:	
I	Chesapeake Bay Comprehensive Study (new recon)	0.25

FISCAL YEAR 2012 PRIORITY ECOSYSTEMS FUNDING—Continued

[In millions of dollars]

Ecosystem account	Projects and studies	Amount
C	Poplar Island	12.00
C	Chesapeake Bay Oysters	5.00
	Total, Chesapeake Bay	17.00
	Everglades:	
C	Continuing projects and activities	163.00
O&M [3]	Continuing projects and activities	5.00
	Total, Everglades	168.00
	Great Lakes:	
I	Interbasin control—(Great Lakes-Ms R Nuisance Species)	3.00
C	Chicago sanitary and ship canal	13.50
O&M	Chicago sanitary and ship canal	10.50
	Total, Great Lakes	27.00
	Gulf coast:	
GI	Louisiana coast comprehensive study (new recon)	0.10
GI	LCA studies	16.00
CG	LCA projects	10.60
	Total, Gulf coast	27.00

[1] I=Investigation
[2] C=Construction
[3] O&M=Operation and Maintenance.

In connection with this effort, the budget provides $168 million for COE for the ongoing South Florida Everglades Restoration Program, consisting of $163 million for Construction and $5 million for O&M. The budget supports the continued construction of five ongoing aquatic ecosystem restoration projects in south Florida:

—Picayune Strand;
—Site One Impoundment;
—Indian River Lagoon South;
—Kissimmee River; and
—the C–111 (South Dade) project.

The budget also supports work on other major ecosystem-wide initiatives, such as $58 million for studies and projects in the California Bay-Delta, including an important new reconnaissance study for fish passage at Englebright and Daguerre Point Dams on the Yuba River; an ongoing feasibility study for the Sacramento-San Joaquin Delta Islands and Levees; an ongoing comprehensive feasibility study for the Sacramento-San Joaquin River Basins; and a new construction project at Hamilton City for ecosystem restoration and flood damage reduction.

The budget includes $128 million for the Columbia River Fish Mitigation program, an ongoing effort to reduce the adverse impacts of a series of COE dams on migrating salmon. Funds will be used to construct juvenile fish bypass facilities, improve adult fish ladders and conduct other activities that support salmon habitat. The budget also provides $73 million for ongoing work under the Missouri River fish and wildlife recovery program to construct shallow water habitat and undertake other activities to recover and protect federally listed species, such as the pallid sturgeon.

INFRASTRUCTURE RECAPITALIZATION

The administration plans to work with the Congress and stakeholders to explore ways to support recapitalization of aging COE infrastructure, modification of its operations, or de-authorization, consistent with modern-day water resources principles and today's and tomorrow's water resources priorities. Under these principles, direct beneficiaries would be asked to pay a significant share of the costs to rehabilitate, expand or replace projects, as they would for a new project, commensurate with the benefits they receive. Options such as direct financing will be considered as part of this effort, where appropriate.

The aging of infrastructure affects all of our activities. For example, with regard to the production of hydropower, the fiscal year 2012 budget provides $176 million to operate and maintain COE hydropower facilities. In order to decide how best to use the available funding, COE has been working under its Hydropower Modernization Initiative (HMI) to develop a long-term capital investment strategy. One significant feature of the HMI is the Asset Investment Planning Tool, which was designed to:

—analyze the condition of critical components and the consequences of failure;
—determine the value of additional hydropower and its cost;
—quantify risk exposure for capital investments; and
—create 20-year funding scenarios to allow for timely and cost-effective rehabilitation or replacement of hydropower facilities and their components.

To assist the Federal Government in rehabilitating aging equipment, COE also is pursuing increased use of non-Federal funds.

HARBOR MAINTENANCE TRUST FUND

The budget provides for use of $758 million from the Harbor Maintenance Trust Fund to maintain coastal channels and harbors. Despite an overall Civil Works reduction of 15 percent below the enacted fiscal year 2010 level, the amount recommended in the fiscal year 2012 budget for harbor maintenance and related work is essentially unchanged from the 2 prior years. The administration also plans to develop legislation to expand the authorized uses of the Trust Fund, so that its receipts are available to finance the Federal share of other efforts in support of commercial navigation through the Nation's ports. No decisions have been made yet on what additional costs would be proposed to be paid from receipts into the Harbor Maintenance Trust Fund. Development of proposed legislation will proceed in the coming months.

INLAND WATERWAYS TRUST FUND

Inland waterways capital investments are funded in the budget at $166 million, of which $77 million is financed from the Inland Waterways Trust Fund. This is the total amount that is affordable in fiscal year 2012 with the current level of revenue coming into the Trust Fund. The administration will work with the Congress and stakeholders to revise the laws that govern the Trust Fund, to include increasing the revenue paid by commercial navigation users of the inland waterways to meet their share of the costs of activities financed from this trust fund.

AMERICA'S GREAT OUTDOORS INITIATIVE AND CIVIL WORKS RECREATION

On April 16, 2010 President Obama signed a Presidential Memorandum establishing the America's Great Outdoors (AGO) Initiative to promote and support innovative community-level efforts to conserve outdoor spaces and to reconnect Americans to the outdoors. This initiative was celebrated at several events around the country, including a public "listening" event the Secretary of the Interior and I held in August 2010 at a Civil Works project near St. Louis, Missouri.

COE has been actively involved with the AGO initiative, working in concert with its partners to leverage financial and human resources so the public can continue to enjoy water-based recreation opportunities at COE lakes. The Civil Works recreation program and activities are closely aligned with the goals of the initiative and include a variety of measures to reconnect Americans, especially young people, with the Nation's outdoor resources.

COE manages 12 million acres of lands and waters supporting water-based recreation and environmental stewardship. The Civil Works program is particularly well-suited to support the AGO initiative, given that 90 percent of COE projects are within 50 miles of metropolitan areas. Camping, hiking, swimming, boating, and other water-oriented recreation opportunities attract 370 million visits a year to 422 COE projects. In addition, COE has active programs to conserve and protect lands and waters for wildlife, fisheries, endangered species and open space.

PLANNING IMPROVEMENTS

Working through the Chief of Engineers, the Army continues to strengthen and improve the planning expertise of COE, including greater support for planning Centers of Expertise, better integration of project purposes, greater reliability of cost estimates and schedules in planning and programming, and continued support for the development of revised water project planning Principles and Guidelines. Also, the Army has initiated a pilot program to identify means of enabling studies to reach decisions more efficiently.

VETERANS CURATION PROJECT

The fiscal year 2012 budget includes $2 million to continue the Veterans Curation Project, which provides vocational rehabilitation and innovative training for wounded and disabled veterans, while achieving historical preservation responsibilities for archaeological collections administered by COE. The project supports work by veterans at curation laboratories located in Augusta, Georgia; St. Louis, Missouri; and Washington, DC.

LOWER-PRIORITY PROGRAMS

Funding of $76 million is provided in the fiscal year 2012 budget for maintenance of navigation harbors and waterway segments that support low commercial use. This is a reduction of $64 million from the fiscal year 2011 budget. The Estuary Restoration Program is funded at $2 million, compared to $5 million in the fiscal year 2011 budget.

No funding is provided for small projects in 4 of the 9 Continuing Authorities Programs (CAPs):

—section 14 (emergency streambank and shoreline protection);
—section 103 (shore protection);
—section 107 (navigation); and
—section 208 (snagging and clearing).

The budget proposes to reprogram $23 million of CAP funds carried over from prior years from these four CAPs to finance ongoing phases of projects in 4 of the remaining 5 CAPs:

—section 111 (mitigation of shoreline damages caused by navigation projects);
—section 204 (beneficial use of dredged material);
—section 206 (aquatic ecosystem restoration); and
—section 1135 (modification of completed projects for the benefit of the environment).

Section 205 (flood damage reduction) also is supported, and has sufficient carryover within it to finance the fiscal year 2012 program without a reprogramming.

No funding is provided for the Aquatic Plant Control program, nor is specific line item funding provided for coordination activities associated with the National Estuary Program and the North American Waterfowl Management Program. Coordination activities will take place, as appropriate, in connection with separately funded programs and projects.

Funding under the Formerly Utilized Sites Remedial Action Program (FUSRAP) is reduced by $21 million, from $130 million in the fiscal year 2011 budget to $109 million in the fiscal year 2012 budget.

AMERICAN RECOVERY AND REINVESTMENT ACT

COE continues the work funded in American Recovery and Reinvestment Act (ARRA). The act provided $4.6 billion for the Civil Works program. That amount includes $2 billion for Construction; $2.075 billion for O&M; $375 million for Mississippi River and Tributaries; $25 million for Investigations; $25 million for the Regulatory Program; and $100 million for the Formerly Utilized Sites Remedial Action Program. The ARRA funds were allocated to more than 800 projects in 49 States, the District of Columbia, and Puerto Rico, and 400 of those projects have been completed.

Nearly all of the $4.6 billion of these funds have been obligated, leaving only a small amount, as authorized, for contract supervision and administration, as well as known contract claims and modifications. As of last month, more than $3.1 billion of the total had been expended, primarily payments to contractors for work already completed. Of the more than 2,100 recipients of the COE ARRA funds, 99.8 percent submitted a report last quarter as required under the act and provisions of ARRA contracts.

The projects funded by ARRA provide important support to the Nation's small businesses in their economic recovery. Of the total ARRA funds, small business awards account for about 51 percent of the ARRA funds obligated and about 72 percent of the total contract actions.

COE achievements to date with ARRA funds include improvement of 28 important commercial navigation harbors and channels; repair or improvement of dozens of hydropower projects; accelerated completion of site cleanup at 9 FUSRAP sites; completion of 822 periodic inspections of federally constructed levee systems, including both systems maintained by COE and those maintained by local sponsors; and completion of important work to restore 57 aquatic ecosystems.

CONCLUSION

In summary, the President's fiscal year 2012 budget for the Army Civil Works program is a performance-based budget that supports water resources investments that will yield long-term returns for the Nation.

Madam Chairman and members of the subcommittee, I look forward to working with this subcommittee in support of the President's budget. Thank you.

Senator FEINSTEIN. Thank you very much for those words.

General Van Antwerp, would you like to make some comments?

STATEMENT OF LIEUTENANT GENERAL ROBERT L. VAN ANTWERP, CHIEF OF ENGINEERS

General VAN ANTWERP. Madam Chairman and distinguished members of the subcommittee, the budget this year funds 92 construction projects, 55 in the flood-storm-damage reduction. Three are budgeted for completion. We have 16 commercial navigation projects in this budget and 19 aquatic ecosystem projects. Two of these are scheduled as new starts.

The budget supports our continued stewardship of water-related infrastructure. The operation and maintenance program for the fiscal year 2012 budget includes $2.314 billion and an additional $131 million under the Mississippi River and Tributaries program.

COE teammates continue to respond wherever and whenever needed to help during major floods and other national emergencies. As you can imagine, we are gearing up right now. The budget provides $27 million for the preparation for floods, hurricanes, and other natural disasters, to include $4 million to support the levee safety initiatives in States known as "silver jackets."

I would like to just provide a quick update on preparations as we look forward—not really look forward to, but as we anticipate potential spring flood events. We are working with the Federal Emergency Management Agency (FEMA) and the National Weather Service to monitor the high probability of spring flooding in the north central United States, a lot of which is already happening out there, specifically the Red River and the upper Mississippi River and the Minnesota River. Based on our projections, our Commanders have requested the advance planning and advance measures funding needed to flood fight. We are out there on the ground right now. And I guess in three words I would say we are ready.

On the international front, although not covered specifically by this subcommittee, I am proud to tell you a little bit about our work in Iraq and Afghanistan, if you will indulge me that. We have 1,168 COE members, largely civilians, right now deployed overseas. Every day they put on their battle armor and they work on the projects that we have asked them to do. They have completed more than 6,000 infrastructure and water-related projects. We have a lot of our Civil Works members that work in COE over there deployed on this military mission.

Last month, Ms. Darcy and I traveled to Afghanistan with my counterparts from the other services and witnessed this amazing work and had a chance to praise them for their efforts and thank them.

On the 21st and 22d of March, we traveled down to New Orleans. We wanted to visit all the major projects in our Hurricane Storm Damage Risk Reduction System and make sure that the system was ready to defend against the 100-year event by June 1 and

I am proud to say and happy to say that we are ready. It has just been amazing what work has been done down there.

PREPARED STATEMENT

Finally, I would like to just say that we are committed to staying on the leading edge of service to our Nation in these water-related issues, and I look forward to your questions. Thank you.

[The statement follows:]

PREPARED STATEMENT OF LIEUTENANT GENERAL ROBERT L. VAN ANTWERP

Chairman Feinstein and distinguished members of the subcommittee: I am honored to be testifying before your subcommittee today, along with the Assistant Secretary of the Army (Civil Works), the Honorable Jo-Ellen Darcy, on the President's fiscal year 2012 budget for the Civil Works Program of the United States Army Corps of Engineers (COE).

My statement covers the following 12 topics:

—Summary of fiscal year 2012 program budget;
—Direct program;
—Investigations program;
—Construction program;
—Operation and maintenance program;
—Reimbursable program;
—Proposed legislation;
—Planning program modernization;
—Efficiency and effectiveness of COE operations;
—Value of the Civil Works Program to the Nation's economy and defense;
—Research and development; and
—National defense.

SUMMARY OF FISCAL YEAR 2012 PROGRAM BUDGET

COE is fully committed to supporting the President's priorities to reduce the deficit, revitalize the economy and restore and protect the environment. The fiscal year 2012 Civil Works budget is a performance-based budget that reflects a focus on the projects and activities that provide the highest net economic and environmental returns on the Nation's investment or address significant risks to human safety. The budget also proposes cancellation of the unobligated balance of funding in the Mississippi River and Tributaries account that was previously provided for construction of the Yazoo Backwater Pumps, Mississippi project. The reimbursable Interagency and International Services Program is projected to involve an additional $1.6 billion.

DIRECT PROGRAM

The budget includes $4.6 billion, including funding for the operation and maintenance of more than 600 flood and storm damage reduction projects, 143 commercial coastal navigation projects, and 51 commercial navigation projects on the inland waterways. It also funds continuing construction of 90 construction projects and 2 new construction starts. The budget includes funds for 58 studies already underway and 4 new study starts. It will enable COE to process approximately 70,000 permit requests and to operate 75 hydropower plants with 350 generating units that produce about 24,000 megawatts per year. The budget will enable about 370 million outdoor recreational visits to COE projects and will provide water supply storage for about 14 percent of the Nation's municipal water needs. The budget will sustain COE's preparedness to respond to natural disasters that we may experience. Finally, the budget also proposes to reduce Federal costs through a reduction in funding in lower-priority programs.

INVESTIGATIONS PROGRAM

The budget for the Investigations program will enable COE to evaluate and design future projects that are most likely to be highperforming within COE three main mission areas:

—commercial navigation;
—flood and storm damage reduction; and
—aquatic ecosystem restoration.

The budget includes $104 million for these and related activities in the Investigations account and $1 million in the Mississippi River and Tributaries account. It funds 58 continuing studies (1 reconnaissance and 57 feasibility) and 4 new studies:

—Englebright and Daguerre Point Dams (Yuba River) Fish Passage, California;
—Cano Martin Pena, Puerto Rico;
—the Chesapeake Bay Comprehensive Plan; and
—the Louisiana Coastal Area Comprehensive Study.

Funding is also included for the Water Resources Priorities Study, a high-priority evaluation of the Nation's vulnerability to inland and coastal flooding, as well as the effectiveness, efficiency, and accountability of existing water resource programs and strategies.

CONSTRUCTION PROGRAM

The goal of the construction program is to deliver as high a value as possible to the Nation from the overall available funding through the construction of new water resources projects and the replacement, rehabilitation, and expansion of existing water resources projects in the three main Civil Works missions (flood and storm damage reduction, aquatic ecosystem restoration, and commercial navigation) and related projects (principally hydropower). The fiscal year 2012 budget includes $1.48 billion in the Construction account and $78 million in the Mississippi River and Tributaries account to further this objective. Consistent with this goal, the budget also gives priority to projects that address a significant risk to human safety.

The budget funds 92 construction projects, including:

—55 Flood and storm damage reduction projects (3 budgeted for completion);
—16 Commercial navigation projects (including 5 continuing mitigation items and 4 dredged material placement areas);
—19 Aquatic ecosystem restoration projects (including 3 projects to meet biological opinions); and
—mitigation associated with 2 Hydropower projects.

Two of these construction projects are new starts. In the construction program, the aquatic ecosystem restoration mission also includes significant environmental mitigation work in the Columbia River Basin and the Missouri River Basin needed to support the continued operation of COE multi-purpose projects, which improves habitat and migration pathways for endangered and threatened species.

Performance measures, which COE uses to establish priorities among projects, include the benefit-to-cost ratios for projects with economic outputs and the most cost-effective restorations of significant aquatic ecosystems. The selection process also gives priority to dam safety assurance, seepage control, static instability correction work, and to projects that address a significant risk to human safety. These performance measures maximize benefits to the Nation from the Civil Works construction program by focusing on the projects that will provide the best net returns for each dollar invested.

OPERATION AND MAINTENANCE PROGRAM

The facilities owned and operated by, or on behalf of, COE of Engineers are aging. As stewards of this infrastructure, we are working to ensure that its key features continue to provide an appropriate level of service to the Nation. Sustaining such service poses a technical challenge in some cases, and proper maintenance is becoming more expensive at many of our projects as infrastructure ages.

The Operation and Maintenance (O&M) program for the fiscal year 2012 budget includes $2.314 billion and an additional $131 million under the Mississippi River and Tributaries program with a focus on the maintenance of key commercial navigation, flood and storm damage reduction, hydropower, and other facilities. Specifically, the O&M program supports completed works owned or operated by the Corps of Engineers, including administrative buildings and laboratories. Work to be accomplished includes:

—operation of the locks and dams of the inland waterways;
—dredging of inland and coastal Federal commercial navigation channels;
—operating multiple purpose dams and reservoirs for flood damage reduction, aquatic ecosystem restoration, hydropower, recreation, and other related purposes;
—maintenance and repair of these facilities;
—monitoring of completed storm damage reduction projects along our coasts; and
—general management of facilities and the lands associated with these purposes.

REIMBURSABLE PROGRAM

Through the Interagency and Intergovernmental Services Program, we help non-DOD Federal agencies, State, local and tribal governments, and other countries with timely, cost-effective implementation of their programs. Rather than develop their own internal workforce to oversee design and construction of projects, these agencies can turn to COE , which has these capabilities. Such intergovernmental cooperation is effective for agencies and the taxpayer by using the skills and talents that we bring to our Civil Works and Military Program missions. The work is principally technical oversight and management of engineering, environmental, and construction contracts performed by private sector firms, and is totally financed by the agencies we serve. We only accept agency requests that we can execute without impacting our Civil Works or Military Programs missions, are consistent with our core technical expertise, and are in the national interest.

Currently, we provide reimbursable support for about 70 other Federal agencies and several State and local governments. Total reimbursement for such work in fiscal year 2012 is projected to be $1.6 billion, reflecting completion of most ARRA work and a general reduction in budget capability for most of our other agency customers. The exact amount will depend on requests from the agencies.

PROPOSED LEGISLATION

The budget includes several legislative proposals that will improve operations or enable execution of important national programs. The budget proposes to extend the authority to implement measures to prevent the migration of invasive aquatic species into the Great Lakes, to transfer funds between accounts to enable completion of the New Orleans perimeter protection by June 2017, to purchase the property that houses the Cold Regions Research Engineering Laboratory in Hanover, New Hampshire, and to make a minor modification to existing law that will enable us to serve in an official capacity in meetings of the Permanent International Association of Navigation Congresses. As included in the testimony of Assistant Secretary of the Army (Civil Works) Jo-Ellen Darcy, the budget also discusses two other important legislative initiatives, concerning the way in which Federal navigation activities are funded.

PLANNING PROGRAM MODERNIZATION

COE will continue to implement actions to improve its Civil Works Planning Program performance through a planning modernization effort. This effort focuses on how best to organize, manage, operate, and oversee the planning program to more effectively address 21st century water resources challenges, including:

—improved project delivery that yields smarter outcomes;
—improved technical capability of our planners;
—enhanced collaboration with Federal, State, local, and nongovernmental partners;
—evaluating and enhancing Corps Planning Centers of Expertise production capability and staffing; and
—strengthening the objectivity and accountability of our planning efforts.

Our improved planning performance will include:

—updated planning guidance and policy;
—streamlined, adaptable planning processes to improve effectiveness, efficiency, accuracy, and responsiveness; and
—enhanced technical capabilities.

In fiscal year 2011, COE launched a 2-year National Planning Pilot Program to test the concepts of this approach within our current policy and to develop and refine methodologies and processes for planning studies across all business lines in a manner that is sustainable and replicable and that will inform future Civil Works guidance. We expect to conduct approximately 7 to 9 pilot studies over the course of the National Planning Pilot Program.

EFFICIENCY AND EFFECTIVENESS OF THE CORPS OF ENGINEERS OPERATIONS

COE always strives to continually improve the efficiency and effectiveness of its investigations, construction, and operation and maintenance programs. In fiscal year 2012, COE will further expand the implementation of a modern asset management program; increase its focus on the most important maintenance work; implement an energy sustainability program; pursue major efficiencies in the acquisition and operations of its information technology assets; and complete the ongoing reorganization of its acquisition workforce.

EMERGENCY RESPONSE

From across the Nation, the people who work for COE continue to respond whenever needed to the call to help during major floods and other national emergencies. The critical work they are doing reduces the risk of damage to people and communities. The budget provides $27 million for preparedness for floods, hurricanes, and other natural disasters, including $4 million in support of the levee safety initiative for COE participation in the expansion of interagency teams known as Silver Jackets, to include every State, and provide unified Federal assistance in implementing flood and storm damage reduction solutions.

RESEARCH AND DEVELOPMENT

Civil Works Program research and development provides the Nation with innovative engineering products, some of which can have applications in both civil and military infrastructure spheres. By creating products that improve the efficiency and competitiveness of the Nation's engineering and construction industry and by providing more cost-effective ways to operate and maintain infrastructure, Civil Works program research and development contributes to the national economy.

NATIONAL DEFENSE

Internationally, COE continues to support the mission to help Iraq and Afghanistan build foundations for democracy, freedom, and prosperity.

We are proud to serve this great Nation and our fellow citizens, and we are proud of the work COE does to support America's foreign policy, particularly with our ongoing missions in Afghanistan and Iraq. Men and women from across the COE—all volunteers and many of whom have served on multiple deployments—continue to provide critical support to our military missions there and humanitarian support to the citizens of those nations. Currently, 1,168 COE employees (civilian and military) are deployed in Iraq and Afghanistan, where they have completed a total of more than 6,000 infrastructure and water resources projects.

Ms. Darcy and I traveled to Afghanistan last month. As with every opportunity that I've had to travel to that theater, I continue to be amazed—but not surprised—by the progress being made. It was truly a privilege to visit with the outstanding COE men and women who are making this happen, and to see their dedication and commitment.

In Afghanistan, the COE is spearheading a comprehensive infrastructure program for the Afghan national army, and is also aiding in critical public infrastructure projects.

CONCLUSION

COE is committed to staying at the leading edge of service to the Nation. We are committed to change that ensures an open, transparent, and performance-based Civil Works Program.

Thank you, Chairman Feinstein and members of the subcommittee. This concludes my statement.

Senator FEINSTEIN. Thank you very much, General.

Secretary Castle, would you like to begin?

DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

STATEMENT OF HON. ANNE CASTLE, ASSISTANT SECRETARY FOR WATER AND SCIENCE

ACCOMPANIED BY REED MURRAY, PROGRAM DIRECTOR, CENTRAL UTAH PROJECT COMPLETION ACT OFFICE

Ms. CASTLE. Yes. Thank you, Madam Chair, Senator Alexander, and members of the subcommittee. Thank you for inviting me here to discuss the President's 2012 budget request with you today. You have noted Commissioner Connor's presence. With me also is Reed Murray who is the Director of the Central Utah Project Completion Act (CUPCA) should you have any specific questions about that program.

Interior's mission is essential to our American way of life. We protect our natural resources and our cultural heritage. We honor our Nation's trust responsibilities to American Indians and Alaska Natives. We supply water to lands and people throughout the West. We provide energy to power our future. Our Interior Department people and programs touch virtually every single American.

The Interior 2012 budget funds our primary mission areas, and we have done that by eliminating and reducing lower-priority programs, by streamlining and gaining efficiencies, and by deferring some projects.

The 2012 combined budget request for BOR and the CUPCA program is $1.1 billion. As you said, Madam Chair, that is a $78.3 million reduction, 7 percent, from the 2010 enacted level.

One of the highest priorities that we have in the Department of the Interior is to address water challenges by providing Federal leadership on the path to a sustainable water future. We are doing that through our WaterSMART initiative, and we are trying to address the 21st century pressures on our Nation's water supplies. The 2012 budget request by Interior for the WaterSMART initiative is $70 million. That is distributed between BOR and the U.S. Geological Survey (USGS).

Of that request, $59 million is for BOR programs. That includes three ongoing BOR programs, the title 16 Water Recycling and Reuse Grant Program, the Basin Studies Program, and the WaterSMART cost share grant funding.

Two additional programs are being added to the WaterSMART initiative this year. One already existed within BOR. That is the Water Conservation Field Services program. The other is the Cooperative Watershed Management program which is a new program authorized under the Secure Water Act, and we have seed money in the BOR budget for that in 2012.

USGS has requested funding to undertake a multiyear nationwide water availability and use assessment that was also author-

VerDate Nov 24 2008 17:29 Dec 28, 2012 Jkt 064597 PO 00494 Frm 00024 Fmt 6604 Sfmt 6604 U:\2012HEAR\10HEAR\10AP13COE-BOR.TXT 64597

ized by the Secure Water Act, and that is what its funding is in the WaterSMART program.

I want to briefly highlight just a few of BOR's other significant efforts. BOR just released its hydropower resource assessment that takes a look at the potential to add hydropower capacity to existing BOR facilities. The next phase of that assessment will look at adding hydropower capacity to canals and conduits. So we are trying to assess the potential for additional renewable energy at existing facilities.

We are currently in a dialogue with Mexico on the management of the Colorado River, and we have ongoing efforts to improve our water operations on the Colorado River—from looking at renewable energy projects in the headwaters all the way down to desalination efforts near the Mexican border.

We are actively pursuing solutions to the ongoing water challenges in the California Bay-Delta. Our efforts there are focused on co-leading with the Council on Environmental Quality (CEQ) an interagency effort to implement the December 2009 Interim Federal Action Plan.

Our 2012 budget includes funding for the initial implementation of four Indian water rights settlements that were authorized in the Claims Resolution Act at the end of last year. And in addition to those four settlements, BOR's budget includes funding for the Navajo-Gallup Water Supply Project, an ongoing project.

With respect to CUPCA, the 2012 budget request is for $33 million. That includes $28.5 million to design, construct and provide land acquisition for the Utah lake system, which is the last remaining component of the Central Utah Project. That amount includes full funding for the construction of the Provo River Canal Enclosure Project, which will provide 8,000 acre-feet of saved water to benefit endangered species and 30,000 acre-feet, when completed, to municipalities in Salt Lake and Utah Counties in Utah.

This budget was constructed, as has been said, in the context of very difficult economic times. We took a hard look at our existing programs. We made some very, very tough calls, and we made some reductions in order to shoulder our share of responsibility to reduce the deficit. We think we have done that in a way that adequately protects water and power deliveries, protects the ecosystems that are affected by those delivery systems so that we can ensure reliability of supplies in the future, and makes appropriate investments in our infrastructure.

PREPARED STATEMENT

I look forward to your questions. I appreciate and thank you for your support, and this subcommittee's support of the missions within the Department of the Interior. I look forward to discussing this budget with you.

[The statement follows:]

PREPARED STATEMENT OF ANNE CASTLE

Madam Chair, Senator Alexander, and members of this subcommittee, I am pleased to appear before you today to discuss the President's fiscal year 2012 budget for the Department of the Interior. I would also like to thank the members of this subcommittee for your ongoing support for our initiatives over the last 2 years.

The 2012 budget builds on that strong foundation with $12.2 billion requested for the Department of the Interior. The budget demonstrates that we can responsibly cut the deficit, while investing to win the future and sustain the national recovery. Our budget promotes the actions and programs that America told us are important in 50 listening sessions across the country. In response, we developed a new 21st century conservation vision—America's Great Outdoors. The budget continues to advance efforts that you have facilitated in renewable energy and sustainable water conservation, cooperative landscape conservation, youth in the outdoors, and reforms in our conventional energy programs.

I will also discuss the President's fiscal year 2012 budget request for implementation of the Central Utah Project Completion Act, and I thank the subcommittee for your continued support of the Central Utah Project Completion Act Program as well.

INTRODUCTION

Interior's mission—to protect America's natural resources and cultural heritage and honor the Nation's trust responsibilities to American Indians and Alaska Natives—is profound. Interior's people and programs impact all Americans.

The Department is the steward of 20 percent of the Nation's lands including national parks, national wildlife refuges, and the public lands. Interior manages public lands and the Outer Continental Shelf, providing access for renewable and conventional energy development and overseeing the protection and restoration of surface-mined lands. Through the Bureau of Reclamation (BOR), Interior is the largest supplier and manager of water in the 17 Western States and provides hydropower resources used to power much of the country. The Department supports cutting edge research in the earth sciences—geology, hydrology, and biology—to inform resource management decisions at Interior and improve scientific understanding worldwide. The Department of the Interior also fulfills the Nation's unique trust responsibilities to American Indians and Alaska Natives, and provides financial and technical assistance for the insular areas.

The Department of the Interior makes significant contributions to the Nation's economy. It supports more than 1.3 million jobs and more than $370 billion in economic activity each year. Parks, refuges, and monuments generate more than $24 billion in economic activity from recreation and tourism. Conventional and renewable energy produced on Interior lands and waters results in about $295 billion in economic benefits and the water managed by Interior supports more than $25 billion in agriculture. The American outdoor industry estimates 6.5 million jobs are created every year from outdoor activities.

2010 ACCOMPLISHMENTS

At the start of the administration, Interior set on a course to create a comprehensive strategy to advance a new energy frontier; tackle the impacts of a changing landscape; improve the sustainable use of water; engage youth in the outdoors; and improve the safety of Indian communities. These priority goals integrate the strengths of the Department's diverse bureaus and offices to address key challenges of importance to the American public. Interior has been making progress in these areas, including:

Approving 12 renewable energy projects on public lands that when built, will produce almost 4,000 megawatts of energy, enough energy to power close to 1 million American homes, and create thousands of construction and operational jobs.

Designating more than 5,000 miles of transmission corridors on public lands to facilitate siting and permitting of transmission lines and processing more than 30 applications for major transmission corridor rights-of-way.

Establishing 3 of 8 planned regional Climate Science Centers and 9 of 21 Landscape Conservation Cooperatives.

Issuing grants to water districts and other water delivery authorities resulting in the conservation of 150,000 acre-feet of water.

Increasing the number of youth employed in conservation through Interior or its partners by 45 percent more than 2009 levels.

Reducing overall crime in four Indian communities as a result of a concerted effort to increase law enforcement officers, conduct training in community policing techniques, and engage the communities in law enforcement efforts.

The Department advanced key priorities and strategic goals that will improve the conservation and management of natural and cultural resources into the future.

Interior, along with the Department of Agriculture, the Environmental Protection Agency, and the Council on Environmental Quality, participated in the White House Conference on America's Great Outdoors and held 50 public listening sessions across the Country that have helped shape a conservation vision and strategy for the 21st

century. We have released a report, America's Great Outdoors: A Promise to Future Generations that lays out a partnership agenda for 21st century conservation and recreation.

In the spirit of America's Great Outdoors, we welcomed new national wildlife refuges in Kansas and Colorado and proposed a new conservation area in Florida at the headwaters to the Everglades. These refuges mark a new era of conservation for the Department, one that is community-driven, science-based, and takes into account entire ecosystems and working landscapes.

The Department worked with others to develop an action plan to help address water supply and environmental challenges in the California Bay-Delta area, invested more than $500 million in major water projects over the past 2 years, and moved forward on long-standing water availability issues in the Colorado River Basin.

In December, the Secretary issued a recommendation to the Congress to undertake an additional 5.5 miles of bridging on the Tamiami Trail in the Everglades above and beyond the 1-mile bridge now under construction. When combined with other planned work in the Everglades Agricultural Area and water conservation areas, this project should restore 100 percent of historic water quantity and flow to Everglades National Park.

With the help of the Congress, we brought about resolution of the *Cobell* v. *Salazar* settlement and resolved four Indian water rights issues through enactment of the Claims Resolution Act of 2010. We also completed negotiation of a new Compact of Free Association with the island of Palau which awaits congressional approval.

In December of last year, the President hosted the second White House Tribal Nations Conference bringing together tribal leaders from across the United States; we are improving the Nation-to-nation relationship with 565 tribes.

FISCAL RESPONSIBILITY

Interior's 2012 budget must be viewed in the context of the difficult fiscal times facing the Nation and the President's freeze on discretionary funding. The 2012 budget reflects many difficult budget choices, cutting worthy programs and advancing efforts to shrink Federal spending. The budget contains reductions totaling $1.1 billion or 8.9 percent of the 2010 enacted level. Staffing reductions are anticipated in some program areas, which will be achieved through attrition, outplacement, and buy-outs to minimize the need to conduct reductions in force to the greatest extent possible. These reductions are a necessary component of maintaining overall fiscal restraint while allowing us to invest additional resources in core agency priorities.

This budget is responsible. Interior's $12.2 billion budget funds important investments by eliminating and reducing lower-priority programs, deferring projects, reducing redundancy, streamlining management, and capturing administrative and efficiency savings. It maintains funding levels for core functions that are vital to uphold stewardship responsibilities and sustain key initiatives. The 2012 request includes $11.2 billion for programs funded by the Interior, environment, and related agencies appropriation. The 2012 request for BOR and the Central Utah Project Completion Act, funded in the Energy and Water Development Appropriations Act, is $1.1 billion in current appropriations, $78.3 million or 7 percent below the 2010 enacted level.

INVESTING IN THE FUTURE

America's Great Outdoors.—Last year, the administration initiated a national dialogue at the White House Conference on America's Great Outdoors. In 50 listening sessions held across the Country, the public communicated their conservation and recreation priorities, and the result is a report to the President, "America's Great Outdoors: A Promise to Future Generations". The report outlines how the Federal Government can support a renewed and refreshed conservation vision by working in collaboration with communities, farmers and ranchers, businesses, conservationists, youth, and others who are working to protect the places that matter to them and by engaging people across the country in conservation and recreation.

The 2012 America's Great Outdoors initiative focuses on investments that will lead to healthy lands, waters and resources while stimulating the economy—goals that are complementary. Through strategic partnerships, Interior will support and protect historic uses of lands, restore lands and resources, protect and interpret historic and cultural resources, and expand outdoor recreation opportunities. All of these activities have significant economic benefits in rural and urban communities.

Youth.—Furthering the youth and conservation goals of the America's Great Outdoors initiative, the 2012 budget proposes to continue engaging youth by employing and educating young people from all backgrounds.

Interior is uniquely qualified to engage and educate young people in the outdoors and has programs that establish connections for youth ages 18 to 25 with natural and cultural resource conservation. These programs help address unemployment in young adults and address health issues by encouraging exercise and outdoor activities. For example, Interior is taking part in the First Lady's Let's Move initiative to combat the problem of childhood obesity. Interior has long-standing partnerships with organizations such as the 4–H, the Boy Scouts, the Girl Scouts, the Youth Conservation Corps, and the Student Conservation Association. These programs leverage Federal investments to put young people to work and build a conservation ethic.

Cooperative Landscape Conservation.—Interior's 2012 budget realigns programs and funding to better equip land and resource managers with the tools they need to effectively conserve resources in a rapidly changing environment. Significant changes in water availability, longer and more intense fire seasons, invasive species and disease outbreaks are creating challenges for resource managers and impacting the sustainability of resources on public lands. These changes result in bark beetle infestations, deteriorated range conditions, and water shortages that negatively impact grazing, forestry, farming, as well as the status of wildlife and the condition of their habitats. Many of these problems are caused by or exacerbated by climate change.

Interior's 2012 budget includes $175.0 million for cooperative landscape conservation, an increase of $43.8 million. The budget funds the completion of the Climate Science Centers and Landscape Conservation Cooperatives, the organizing framework for the Department's efforts to work collaboratively with others to understand and manage these changes. These efforts will allow the Department to meet its priority goal to identify resources vulnerable to climate change and implement coordinated adaptation response actions for 50 percent of the Nation by the end of 2012.

Water Challenges.—Interior is working to address the 21st century pressures on the Nation's water supplies. Population growth, aging water infrastructure, changing climate, rising energy demands, impaired water quality and environmental needs are among the challenges. Water shortage and water use conflicts have become more commonplace in many areas of the United States, even in normal water years. As competition for water resources grows, the need for information and tools to aid water resource managers also grows. Water issues and challenges are increasing across the Nation, but particularly in the West and Southeast due to more prolonged droughts than we have experienced historically. Traditional water management approaches no longer meet today's needs.

BOR proposes to fund the rebased WaterSMART at $58.9 million, $11 million below 2011 levels. The three ongoing WaterSMART programs include:

—the WaterSMART Grant program funded at $18.5 million;

—Basin Studies funded at $6 million; and

—the title XVI Water Reclamation and Reuse program funded at $29 million.

The rebasing adds the existing Water Conservation Field Services program, funded at $5.1 million, and participation by BOR in the Cooperative Watershed Management program, funded at $250,000. WaterSMART is a joint effort with USGS. USGS will use $10.9 million, an increase of $9 million, for a multi-year, nationwide water availability and use assessment program.

Other significant programs and highlights specific to BORinclude:

In 2010, the Secretary issued a Secretarial Order establishing the WaterSMART program which embodies a new water sustainability strategy. WaterSMART coordinates Interior's water sustainability efforts, creates a clearinghouse for water conservation best practices and implements a department-wide water footprint reduction program to reduce consumption of potable water by 26 percent by 2020.

We are in dialogue with Mexico on the management of the Colorado River. We have ongoing efforts to improve our management of resources on the Colorado River, from renewable hydropower development near the headwaters to a pilot program of desalination near the Mexican border.

We are actively pursuing workable solutions to regional issues such as in the California Bay-Delta. The Bay-Delta is a source of drinking water for 25 million Californians and sustains about $400 billion in annual economic activity, including a $28 billion agricultural industry and up until recently supported a thriving commercial and recreational fishing industry. Our efforts in the Bay-Delta are focused on co-leading an inter-agency effort with the Council on Environmental Quality (CEQ) to implement the December 2009 Interim Federal Action Plan for the California Bay-Delta Conservation Plan. In coordination with five other Federal agencies, we are leveraging our activities to address California water issues, promote water efficiency and conservation, expand voluntary water transfers in the Central Valley, fund drought relief projects, and make investments in water infrastructure. Over the past 2 years, we have invested more than $500 million in water projects in California.

We have also, in close coordination with NOAA and the State of California, worked on the California Bay-Delta Conservation Plan, a long-term plan aimed at restoring both reliable water supplies and a healthy Bay-Delta ecosystem.

On March 22 we announced an update to the Water Supply Allocation for Central Valley Project (CVP) water users for 2011. This updated allocation reflects improved precipitation and snowpack in the Sierra Nevada Mountains in the last month. We are pleased to report that the current allocation for most CVP contractors is 100 percent of their contract supply. Agricultural water service contractors South-of-Delta allocations have been increased from 50 percent to 65 percent and municipal and industrial contracts from 75 percent to 90 percent. These allocations represent good news given recent years, but many challenges remain. We will continue to work with our Federal, State, and local partners to improve water supply reliability while addressing significant ecological issues. BOR is continuing to update the forecast to provide the most current information to its stakeholders.

HYDROPOWER

Hydropower is a very clean and efficient way to produce energy and is a renewable resource. Each kilowatt-hour of hydroelectricity is produced at an efficiency of more than twice that of any other energy source. Further, hydropower is very flexible and reliable when compared to other forms of generation. BOR has nearly 500 dams and 10,000 miles of canals and owns 58 hydropower plants, 53 of which are operated and maintained by BOR. On an annual basis, these plants produce an average of 40 million megawatt (MW) hours of electricity, enough to meet the entire electricity needs of more than 9 million people on average.

BOR and the Federal Energy Regulatory Commission (FERC) have an existing MOU, signed in 1992, that addresses the establishment of processes for early resolution of issues related to the timely development of non-Federal hydroelectric power at BOR facilities. BOR and FERC recently met to discuss how to improve the timeliness of the processes developed in that MOU and resolution of authority issues.

BOR is assessing the potential for developing low-head hydroelectric generating capacity on federally owned canals and conduits.

Overall, the Department shares the subcommittee's view that interagency coordination can leverage Federal and private sector investment in additional hydropower development. This consideration was foremost in the Department's signing a Memorandum of Understanding with the Department of Energy and COE on March 24, 2010 to increase communication between Federal agencies and strengthen the long-term relationship among them to prioritize the generation and development of sustainable hydropower. This administration is committed to increasing the generation of environmentally sustainable, affordable hydropower for our national electricity supplies in as efficient a manner as possible.

Indian Land and Water Settlements.—Interior's 2012 budget includes $84.3 million in BOR and Bureau of Indian Affairs (BIA) to implement land and water settlements.

BOR's budget includes $51.5 million for the initial implementation of four settlements authorized in the Claims Resolution Act of 2010. The legislation included water settlements for the Taos Pueblo of New Mexico and Pueblos of New Mexico named in the Aamodt case, the Crow Tribe of Montana, and the White Mountain Apache Tribe of Arizona. BOR's contribution to the Navajo-San Juan settlement is also included in the account.

The Claims Resolution Act of 2010 establishes trust funds for tribes to manage water systems and settlement funds to develop infrastructure. The primary responsibility for constructing these water systems was given to BOR, while BIA is responsible for the majority of the trust funds, which includes $207.2 million in mandatory funding in 2011.

These settlements will deliver clean water to the Taos Pueblo and the Pueblos of Nambe, Pojoaque, San Ildefonso, and Tesuque in New Mexico, the Crow Tribe of Montana, and the White Mountain Apache Tribe of Arizona. In addition to funding for the initial implementation of these four settlements, BOR's budget includes $24.8 million for the Navajo-Gallup Water Supply project. In the 2012 budget, BORis establishing an Indian Water Rights Settlements account to assure continuity in the construction of the authorized projects and to highlight and enhance transparency. Both BOR and BIA are working cooperatively to implement the settlements.

CENTRAL UTAH PROJECT COMPLETION ACT

I am pleased to provide the following information about the President's fiscal year 2012 budget request for implementation of Central Utah Project Completion Act (CUPCA).

CUPCA, titles II–VI of Public Law 102–575, provides for completion of the Central Utah Project (CUP) by the Central Utah Water Conservancy District. The act also authorizes funding for fish, wildlife, and recreation mitigation and conservation; establishes an account in the Treasury for deposit of these funds and other contributions; establishes the Utah Reclamation Mitigation and Conservation Commission to coordinate mitigation and conservation activities; and provides for the Ute Indian Rights Settlement.

The 2012 request for the Central Utah Project Completion Account provides $33 million for use by the District, the Mitigation Commission, and the Department to implement titles II–IV of the act, which is $9 million less than the 2010 enacted level. The decrease in funding for the 2012 budget is due in part to accelerated funding provided in 2009 through the American Recovery and Reinvestment Act and in part to the administration's effort to reduce the deficit.

The request for the District includes $28.5 million to fund the designs, specifications, land acquisition, and construction of the Utah Lake System ($18.5 million). This includes full funding ($10 million) for construction of the Provo River Canal Enclosure Project, which when completed will provide 8,000 acre-feet of conserved water for endangered fish and convey 30,000 acre-feet of CUP water.

The request includes $2 million for the Mitigation Commission to implement the fish, wildlife, and recreation mitigation and conservation projects authorized in title III ($1.8 million) and to complete mitigation measures committed to in pre-1992 BOR planning documents ($200,000), all of which are necessary to allow CUP operations.

Finally, the request includes $2.5 million for the program office for endangered species recovery and operation and maintenance costs associated with instream flows and fish hatchery facilities ($954,000) and for program administration ($1.6 million).

CONCLUSION

Thank you for the opportunity to testify on behalf of the President's fiscal year 2012 budget request for the Department of the Interior. I want to reiterate my appreciation for the long-standing support of this subcommittee. This budget has fiscal discipline and restraint, but it also includes forward looking investments. We have a tremendous opportunity to improve the future for all generations with wise investments in healthy lands, clean waters and expanded energy options.

I look forward to working with you to implement this budget. This concludes my overview of the fiscal year 2012 budget request for the Department of the Interior. I am happy to answer any questions that you may have.

Senator FEINSTEIN. Thank you very, very much.

General, I would like to begin with the Harbor Maintenance Trust Fund if I might. It is my understanding that this fund has a significant surplus and that the budget request states that the administration will be making a proposal concerning the fund. As I understand it, this proposal will allow other agencies that are conducting port-related activities to charge those activities to the trust fund. Is that correct? Could you explain this proposal?

General VAN ANTWERP. Senator, I will take a stab at that and then turn to my policy partner here to address the other part.

First of all, you are absolutely correct that there is a large amount in the fund, probably estimated at around $6 billion.

Senator FEINSTEIN. Excuse me.

General VAN ANTWERP. Yes, ma'am.

Senator FEINSTEIN. I left out Commissioner Connor, and it was truly an oversight. Why do you not finish with that, if it is agreeable? Then, Commissioner Connor, I really apologize.

General VAN ANTWERP. We were smiling at each other. I thought you let him off the hook. We want to hear from him. I will just conclude this one part about the Harbor Maintenance Trust Fund.

Generally in a given year, we get about $1.4 billion in receipts, and we have budgeted this year along the lines of $750 million from the trust fund.

And I will let Ms. Darcy take the policy part of this, if that is okay.

Senator FEINSTEIN. Okay, fine.

Ms. DARCY. Would you like me to finish now, Senator?

Senator FEINSTEIN. Well, where I am going is whether or not this rapidly depletes the trust fund.

Ms. DARCY. Well, the trust fund, as the General said, gets about $1.4 billion annually; those funds currently are in the Treasury even though all of the funds that come in must be appropriated. And for COE, we get about $783 million appropriated from that annual revenue stream in our annual appropriations. So the balance is in the Treasury and the rest of its use is determined by the administration and by the Congress.

Senator FEINSTEIN. It is my understanding that the budget proposal does not provide for full authorized widths and depths to be maintained at any harbor handled by COE. Maybe you would like to come back to this, but my concern is that you will eat up the trust fund with other activities. The dredging gets done partially and we have some real impediment to trade and commerce in our country. So we will come back to that.

Commissioner Connor.

STATEMENT OF HON. MICHAEL L. CONNOR, COMMISSIONER

Mr. CONNOR. Thank you, Madam Chair. I took no offense. If I have learned nothing else in this job, it is sometimes the less said the better.

So I thank you for your kind words and I thank you and the members of the subcommittee for your support of BOR, and I appreciate the opportunity to discuss the President's 2012 request.

Overall, BOR's budget reflects a comprehensive set of actions and initiatives that support BOR's mission. The budget continues to emphasize working smarter to address the water needs of a growing population. Certainty and sustainability are primary goals with respect to the use of water resources that require BOR to take action on many fronts, and our budget proposal was developed with that principle in mind.

I should note that our efforts to work smarter include an array of partnerships with COE, from the Joint Dam Safety and Flood Protection Project at Folsom Dam to our sustainable hydropower initiative. In these tight budget times, combining our resources with those of COE will help bring value to the American taxpayer.

The fiscal year 2012 budget request for BOR focuses on six priorities which I want to touch briefly on in my remaining time, and I will avoid those areas already discussed.

Number 1, infrastructure. Overall, our budget continues to support the need to maintain infrastructure in a safe operating condition while addressing the myriad of challenges facing water users in the West. Approximately 51 percent of our water and related re-

sources budget, or $407 million, is dedicated to operation, maintenance, and rehabilitation activity. These activities include the dam safety program, site security program, and RAX, which is shorthand for replacements, additions, and extraordinary maintenance.

As already noted, a second priority is the WaterSMART program. A specific aspect that I want to highlight is that we have established a priority goal for approving and funding actions to increase the available water supply for agricultural, municipal, industrial, and environmental uses in the Western United States by 490,000 acre-feet by the end of 2012. WaterSMART concentrates on expanding and stretching limited water supplies in the West to reduce conflict, facilitate solutions to complex water issues, and meet the needs of expanding municipalities, the environment, and agriculture. Conservation and efficient management are central to the creative solutions needed in the arid West.

Ecosystem restoration is the third priority area. In order to meet BOR's mission goals of sustainably producing power and delivering water, we must continue to focus on the protection and restoration of the aquatic and riparian ecosystems affected by our operations. Ecosystem restoration involves a large number of activities, including our Endangered Species Recovery programs.

Twenty to 25 percent of BOR's 2012 budget is allocated to activities in support of ecosystem restoration. This amount includes the request for operating, managing, and improving California's Central Valley Project, or CVP. CVP-related funding will support completion of the Red Bluff pumping plant and fish screen project on the Sacramento River, the Trinity River, and the San Joaquin River restoration programs, and other actions to protect and enhance California's Bay-Delta region.

Our budget request also supports ongoing implementation of the Lower Colorado River Multi-species Program, the Platte River Endangered Species Recovery Program, the Upper Colorado and San Juan River Endangered Fish Programs.

In addition, funding requested for the Columbia and Snake River Salmon Recovery Program will implement required biological opinion actions associated with the Federal Columbia River power system.

Finally, funding is also sought for the Klamath, Middle Rio Grande, and Yakima projects to support extensive initiatives to address the competing demands in those basins.

Cooperative landscape conservation and renewable energy production, a fourth area of focus, are departmental initiatives in which BORis actively engaged. As a threshold matter, we are developing and implementing approaches to understand and effectively adapt to the risks and impacts of climate change on western water. As you know, Madam Chair, better than anybody, the future protections of decreasing flows in the Colorado River and reduced snowpack in the Sierra Nevada Mountains have already caused Californians to actively begin implementing local and regional solutions to the threats to their water supplies and the environment. Other areas of the country are starting to follow suit.

Through our Basin Studies program and implementation of the Secure Water Act, BOR is aggressively trying to assist in acquiring the data and improving the science related to future projections of

water supplies so that effective adaptation strategies can be developed and implemented. In 2012, the Basin Studies program will continue west-wide risk assessments focusing on the threats to water supplies from climate change and other sources and will coordinate responsive actions with the Department's Landscape Conservation Cooperatives.

BOR's science and technology program will also continue research that targets improved capability for managing water resources in the face of climate change, invasive species issues, as well as integrating renewable energy and energy-efficiency activities into our water operations.

A fifth initiative is very important to the administration and that is our longstanding commitment to the Secretary's goal to strengthen tribal nations. Assistant Secretary Castle has already mentioned our support for the Indian water rights programs. BOR is going to begin a number of implementation activities this year in support of the recently enacted four settlements, as well as continuing activities with respect to other Indian water rights settlements.

I should note that we have requested $36 million for rural water projects which also support a number of tribal nations.

PREPARED STATEMENT

Madam Chair, in conclusion, we appreciate again your support for BOR and the support of the subcommittee, and I will answer questions at the appropriate time.

[The statement follows:]

PREPARED STATEMENT OF MICHAEL L. CONNOR

Thank you Madam Chair, Senator Alexander, and members of this subcommittee for the opportunity to discuss with you the President's fiscal year 2012 budget request for the Bureau of Reclamation (BOR). With me today is Bob Wolf, Director of Program and Budget.

I appreciate the time and consideration this subcommittee gives to reviewing and understanding BOR's budget and its support for the program. BOR works hard to prioritize and define our program in a manner that serves the best interest of the public.

Our fiscal year 2012 request continues support for activities that, both now and in the future, will deliver water and generate hydropower, consistent with applicable State and Federal law, in an environmentally responsible and cost-effective manner. Overall, our goal is to promote certainty, sustainability, and resiliency for those who use and rely on water resources in the West. Success in this approach will help ensure that BOR is doing its part to support the basic needs of communities, as well as providing for economic growth in the agricultural, industrial, and recreational sectors of the economy. In keeping with the President's pledge to freeze spending and focus on deficit reduction, this budget reflects reductions and savings where possible. Although the 2012 budget request allows BOR to fulfill its core mission, essential functions have been trimmed and economized wherever possible.

The budget continues to emphasize working smarter to address the water needs of a growing population and assisting States, tribes, and local entities in solving contemporary water resource challenges. It also emphasizes the operation and maintenance of BOR facilities in a safe, efficient, economic, and reliable manner; assuring systems and safety measures are in place to protect the public and BOR facilities. Funding for each program area down to the individual projects within BOR's request is based upon adherence to administration, departmental, and BOR priorities. BOR is responsible for the oversight, operation, and maintenance of major Federal infrastructure that is valued at $87.7 billion in current dollars. Key areas of focus for fiscal year 2012 include Water Conservation, Landscape Conservation Cooperatives and Renewable Energy, Ecosystem Restoration, Youth Employment, supporting tribal nations and maintaining infrastructure. Recognizing the budget

challenges facing the Federal Government as a whole, BOR will continue its efforts to partner with other Federal agencies such as the U.S. Army Corps of Engineers (COE), Department of Energy (DOE), and the Natural Resources Conservation Service, to maximize the efficiency by which we implement our programs.

BOR's 2012 budget request is $1 billion, which includes $53.1 million for the Central Valley Project Restoration Fund (CVPRF). This request is offset by discretionary receipts in the CVPRF, estimated to be $52.8 million. The request for permanent appropriations in 2012 totals $194.5 million. Overall, BOR's 2012 budget is a responsible one and consistent with the administration's goal of fiscal sustainability. BOR will still be making strategic investments that provide a strong foundation to meet water resources challenges across the West.

WATER AND RELATED RESOURCES

The 2012 budget request for Water and Related Resources, BOR's principal operating account, is $805.2 million, a decrease of $108.4 million from the 2011 request.

The request includes a total of $398.5 million for water and energy, land, and fish and wildlife resource management and development activities. Funding in these activities provides for planning, construction, water conservation activities, management of BOR lands including recreation, and actions to address the impacts of BOR projects on fish and wildlife.

The request also provides a total of $406.7 million for water and power facility operations, maintenance, and rehabilitation activities. BOR emphasizes safe, efficient, economic and reliable operation of facilities, ensuring systems and safety measures are in place to protect the facilities and the public. Providing the funding needed to achieve these objectives continues to be one of BOR's highest priorities.

HIGHLIGHTS OF THE FISCAL YEAR 2012 REQUEST FOR WATER AND RELATED RESOURCES

I would like to share with the subcommittee several highlights of the BOR budget including an update on the WaterSMART (Sustain and Manage America's Resources for Tomorrow) Program and Interior's establishment of a Priority Goal target to enable capability to increase available water supply for agricultural, municipal, industrial, and environmental uses in the Western United States by 490,000 acre-feet by the end of 2012.

WaterSMART Program.—The request focuses resources on the Department of the Interior's WaterSMART program. The program concentrates on expanding and stretching limited water supplies in the West to reduce conflict, facilitate solutions to complex water issues, and to meet the growing needs of expanding municipalities, the environment, and agriculture.

BOR proposes to fund the rebased WaterSMART program at $58.9 million, $11 million below 2011 levels. The three ongoing WaterSMART programs include:

—the WaterSMART Grant program funded at $18.5 million;

—Basin Studies funded at $6 million; and

—the title XVI Water Reclamation and Reuse program funded at $29 million.

The rebased program adds the existing Water Conservation Field Services program, funded at $5.1 million, and participation by BOR in the Cooperative Watershed Management program, funded at $250,000. This is a joint effort with the USGS.

Other significant programs and highlights include:

Ecosystem Restoration.—In order to meet BOR's mission goals of securing America's energy resources and managing water in a sustainable manner for the 21st century, a part of its programs must focus on the protection and restoration of the aquatic and riparian environments affected by its operations. Ecosystem restoration involves a large number of activities, including BOR's Endangered Species Act recovery programs, which are required in order to continue project operations and directly address the environmental aspects of the BOR mission.

The 2012 request provides $154.6 million for operating, managing and improving California's Central Valley Project (CVP). This amount supports Ecosystem Restoration including $34.8 million for the Red Bluff Pumping Plant and Fish Screen within the CVP, Sacramento River Division, which will be constructed to facilitate passage for threatened fish species, as well as providing water deliveries. The funding for the CVP also includes $10.5 million for the Trinity River Restoration program and $3 million from the CVP Restoration Fund which includes development of a comprehensive monitoring and adaptive management program for fishery restoration and construction of channel rehabilitation projects at various sites along the Trinity River.

The request includes $26 million for Lower Colorado River Operations to fulfill the role of the Secretary as water master for the Lower Colorado River and implementation of the Lower Colorado River Multi-Species Conservation (MSCP) program which provides long-term Endangered Species Act compliance for the operations. Of this amount, $18.3 million for the MSCP program will provide quality habitat to conserve populations of 26 species.

The budget requests $20 million for other Endangered Species Act Recovery Implementation programs, including $11 million in the Great Plains Region to implement the Platte River Endangered Species Recovery Implementation program. It also includes $6.2 million for the Upper Colorado and San Juan River Endangered Fish Recovery programs. This funding will continue construction of a system that automates canal operations to conserve water by matching river diversions with actual consumptive use demands and redirecting the conserved water to improve instream flows. Additionally, the Columbia/Snake River Salmon Recovery program funding of $17.8 million will be used for implementation of required Biological Opinion actions including extensive hydro actions, plus tributary habitat and hatchery initiatives.

The fiscal year 2012 budget includes $18.6 million for the Klamath project, which supports studies and initiatives to improve water supplies to meet the competing demands of agricultural, tribal, wildlife refuge, and environmental needs in the Klamath River Basin.

No funding is requested for the Klamath Dam Removal and Sedimentation Studies. These studies are being completed with funds previously appropriated and will be used to inform a Secretarial Determination in 2012 as to whether removing PacifiCorp's four dams on the Lower Klamath River is in the public interest and advances restoration of the Klamath River fisheries. The studies and Secretarial Determination are being carried out pursuant to an agreement with PacifiCorp and the States of California and Oregon.

The fiscal year 2012 budget includes $23.6 million for the Middle Rio Grande project. Funds support the acquisition of supplemental non-Federal water for Endangered Species Act efforts and low flow conveyance channel pumping into the Rio Grande during the irrigation season. Further, funding is used for recurring life-cycle river maintenance necessary to ensure uninterrupted, efficient water delivery to Elephant Butte Reservoir, reduced risk of flooding, as well as delivery obligations to Mexico.

The Yakima River Basin Water Enhancement Project request is $8.9 million, which will continue funding grants to the Benton and Roza Irrigation Districts and Sunnyside Division Board of Control, to implement conservation measures and monitor the effects of those measures on the river diversions.

Cooperative Landscape Conservation and Renewable Energy.—BOR is actively engaged in developing and implementing approaches to understand, and effectively adapt to, the risks and impacts of climate change on western water management. The Basin Studies Program is part of Interior's integrated strategy to respond to climate change impacts on the resources managed by the Department, and is a key component of the WaterSMART Program. In 2012, the Basin Studies Program will continue West-wide risk assessments focusing on the threats to water supplies from climate change and other factors and will be coordinated through the Department's Landscape Conservation Cooperatives (LCCs). BOR will take the lead responsibility for establishing and coordinating work at the Desert and Southern Rockies LCCs. Included within BOR's Science and Technology program is water resources research targeting improved capability for managing water resources under multiple drivers affecting water availability, including climate change. This research agenda will be collaborated and leveraged with capabilities of the Interior Climate Science Centers.

BOR is also working in partnership with DOE and COE in identifying opportunities to address the President's clean-energy goals through the development of new sustainable hydropower capacity as well as integrating renewable energy in our operations. The partnership with DOE and its Power Marketing Administrations will also assess climate change impacts on hydropower generation.

Supporting Tribal Nations.—BOR has a long-standing commitment to realizing the Secretary's goal to strengthen tribal nations. Fiscal year 2012 continues support through a number of BOR projects ranging from endangered species restoration to rural water and implementation of water rights settlement actions.

The request includes $12.8 million for the Animas-La Plata project to continue constructing components of the Navajo Nation Municipal Pipeline and filling Lake Nighthorse as the project nears completion.

The fiscal year 2012 BOR budget requests $35.5 million for on-going authorized rural water projects. The projects that benefit tribal nations include Mni Wiconi, the rural water component of the Garrison Diversion Unit, Fort Peck Reservation/Dry

Prairie, Jicarilla Apache Reservation, and Rocky Boys/North Central Montana. One other rural water project that does not directly affect tribes is the Lewis and Clark Project. Funding for the Perkins County Project is complete. The first priority for funding rural water projects is the required O&M component, which is $15.3 million for fiscal year 2012. For the construction component, BOR allocated funding based on objective criteria that gave priority to projects nearest to completion and projects that serve on-reservation needs.

The request includes $7 million for the Native American Affairs program to provide technical support for Indian water rights settlements and to assist tribal governments to develop, manage and protect their water and related resources. The Columbia/Snake River Salmon Recovery, Klamath, Central Valley Project Trinity River Restoration, Yakima and Yakima River Basin Water Enhancement Projects mentioned above under Ecosystem Restoration benefit tribal nations. Also, the newly established Indian Water Rights Settlement Account discussed below supports tribal nations.

Youth Employment.—To meet the Secretary's challenge to achieve the Priority Goal for youth employment, BOR is working hard to engage, educate, and employ our Nation's youth in order to help develop the future stewards of our lands. Secretary Salazar challenged the Interior Bureaus to increase employment of youth between the ages of 15 and 25 in natural and cultural resource positions. Last year, BOR began working with youth conservation corps to hire youth and expose them to the great work that it does. We continue to use all hiring authorities available to bring young people in through internships, crew work, and full time positions.

Aging Infrastructure.—Through BOR's continued emphasis on preventive maintenance and regular condition assessments (field inspections and reviews), the service life of many BOR assets and facilities have been extended, thereby delaying the need for significant replacements and rehabilitation efforts, including the related funding needs. Although BOR and its project beneficiaries have benefited greatly from this preventive maintenance, we recognize that as assets and facilities age, they require an increased amount of maintenance. Sometimes this requires more frequent preventive maintenance, and, in other situations, significant extraordinary maintenance, rehabilitations, or replacements may be required.

It is important to note that much of the Operation and Maintenance (O&M) funding responsibilities of BOR's assets lies with our project beneficiaries and those operating entities that operate and maintain federally owned transferred works. For some operating entities and project beneficiaries, rehabilitation and replacement needs may exceed available resources. In particular, many smaller irrigation or water conservancy districts are unable to fund these needs in the year incurred absent long-term financing assistance. To address this issue, the administration is currently exploring strategies for helping these entities to rehabilitate these facilities. We are also exploring potential utilization of the authority provided under Public Law 111–11 that would allow extended repayment of extraordinary (nonroutine) maintenance costs on project facilities. Water users are currently required by Federal reclamation law to pay these costs, which are often substantial, in advance.

BOR's fiscal year 2012 proposed budget is $40.8 million in appropriations for various projects for Replacements, Additions, and Extraordinary Maintenance (RAX) activities where BOR is directly responsible for daily O&M. This request is central to mission objectives of operating and maintaining projects to ensure delivery of water and power benefits. BOR's RAX request is part of its overall Asset Management Strategy that relies on condition assessments, condition/performance metrics, technological research and deployment, and strategic collaboration to continue to improve the management of its assets and deal with its aging infrastructure challenges. This amount represents only the fiscal year 2012 request for discretionary appropriations. Additional RAX items are directly funded by revenues, customers, or other Federal agencies.

The Bonneville Power Administration will continue to provide up-front financing of power operation and maintenance and for major replacements and additions for the power plants at the Boise, Columbia Basin, Hungry Horse, Minidoka, Rogue River, and Yakima projects. In the Great Plains (GP) Region, BOR, Western Area Power Administration, and COE have entered into an agreement which enables the customers to voluntarily direct fund power RAX items. A long-term funding agreement with the customers for the Parker-Davis Project on the Colorado River was executed in fiscal year 1999. Fiscal year 2012 costs of operation, maintenance and replacement for this project will be 100 percent up-front funded by the customers. To date, the Central Valley Project power O&M program is funded 100 percent by the customers, in addition to funding selected RAX items. BOR will continue to explore ways to reduce the Federal cost of its projects and programs.

A total of $83.7 million is requested for BOR's Safety of Dams program, which includes $63.6 million directed to dam safety corrective actions; of that, $27.5 million is for work at Folsom Dam. Funding also includes $18.5 million for safety evaluations of existing dams and $1.6 million to oversee the Interior Department's Safety of Dams program.

BOR's request for Site Security is $25.9 million to ensure the safety and security of the public, BOR's employees, and key facilities. This funding includes $6.9 million for physical security upgrades at high-risk critical assets and $19.1 million to continue all aspects of bureauwide security efforts including law enforcement, risk and threat analysis, personnel security, information security, risk assessments and security-related studies, and guards and patrols.

BOR continues efforts to reach agreements with non-Federal and Federal partners to share in the cost of water resource management and development. Cost-sharing of 50 percent for construction and rehabilitation of recreation facilities at various BOR reservoirs will continue. Additionally, BOR's current planning program seeks 50 percent cost-sharing on most studies. This reflects BOR's emphasis on partnerships for water management initiatives.

INDIAN WATER RIGHTS SETTLEMENTS

On December 8, 2010 the President signed the Claims Resolution Act of 2010 that included four water settlements. These settlements resolve longstanding and disruptive water disputes, provide for the quantification and protection of tribal rights, and will deliver clean water to the Pueblos of Taos, Nambe, Pojoaque, San Ildefonso, and Tesuque in New Mexico, the Crow Tribe of Montana, and the White Mountain Apache Tribe of Arizona. In order to accomplish this, the act provides various mechanisms and funding structures designed for both construction and for the tribes to use to manage water systems following construction. The primary responsibility for developing water infrastructure under these settlements was given to BOR. Mandatory funding was provided to both BIA and BOR in 2011 for a portion of the funds established under the act. We anticipate that BOR will begin expending some of this mandatory funding to work with all parties to begin implementing these settlements.

The four Indian water rights settlements will provide water supplies and offer economic security for the tribes and pueblos described above. The agreements will build and improve reservation water systems, rehabilitate irrigation projects, construct a regional multi-pueblo water system, and codify water-sharing arrangements between Indian and neighboring communities. Construction will take place over time and annual funding requirements will vary from year to year. Notwithstanding the availability of some level of mandatory funding, discretionary appropriations will still be necessary. BOR is requesting $26.7 million in 2012 for the initial implementation of these four settlements.

BOR is establishing the Indian Water Rights Settlements account to assure continuity in the construction of the authorized projects and to highlight and enhance transparency in handling these funds. In establishing this account, BOR will also request $24.8 million for the Navajo-Gallup Water Supply project (title X of Public Law 111–11) in order to have major current funding for BOR's Indian Water Rights Settlements treated in the Claims Resolution Act in a single account.

The Navajo-Gallup Water Supply Project will provide reliable and sustainable municipal, industrial, and domestic water supplies from the San Juan River to the Navajo Nation including:

—the Window Rock, Arizona area;

—the city of Gallup, New Mexico; the Navajo Agricultural Products Industry; and

—the southwest portion of the Jicarilla Apache Nation Reservation.

The total request for BOR for Indian Water Rights Settlements in 2012 is $51.5 million in discretionary funding and $60 million in permanent funds.

POLICY AND ADMINISTRATION

The 2012 budget request for the Policy and Administration appropriation account, the account that finances BOR's central management functions, is $60 million or 6 percent of the total request, a reduction of $1.2 million from the 2011 request. This reduction reflects the impact of the pay freeze and the Administrative Cost Savings discussed below.

ADMINISTRATIVE COST SAVINGS AND MANAGEMENT EFFICIENCIES

The 2012 budget request includes reductions that reflect the Accountable Government Initiative to curb nonessential administrative spending in support of the President's commitment on fiscal discipline and spending restraint. In accordance with

this initiative, BOR's budget includes $5.8 million in savings in 2012 against actual 2010 expenditures in the following activities: travel and transportation of persons, transportation of things, printing and reproduction, and supplies and materials. Actions to address the Accountable Government Initiative and reduce these expenses build upon management efficiency efforts proposed in 2011 totaling $3.9 million in travel and relocation, Information Technology, and strategic sourcing and bureau-specific efficiencies totaling $1.3 million.

CENTRAL VALLEY PROJECT RESTORATION FUND

The 2012 budget includes a request of $53.1 million for the CVPRF. This budget request is offset by collections estimated at $52.8 million from mitigation and restoration charges authorized by the Central Valley Project Improvement Act. The request considers the effects of the San Joaquin River Restoration Settlement Act (Public Law 111–11, March 30, 2009) which (beginning in 2010) redirects certain fees, estimated at $5.6 million in fiscal year 2012, collected from the Friant Division water users to the San Joaquin River Restoration Fund.

SAN JOAQUIN RIVER RESTORATION FUND

The fiscal year 2012 budget also reflects the settlement of *Natural Resources Defense Council* v. *Rodgers*. BOR proposes $9 million in discretionary funds into this account, which was established by the San Joaquin River Restoration Settlement Act. Under the Settlement, the legislation also provides for approximately $2 million in annual appropriations for the Central Valley Project Restoration Fund for this purpose, as well as mandatory funds. The Fund seeks to provide a variety of physical improvements within and near the San Joaquin River within the service area of the Friant Division long term contractors to achieve the restoration and water management goals. These funds are important for BOR to meet various terms of the settlement that brought water contractors, fishery advocates, and other stakeholders together to bring to an end 18 years of contentious litigation.

CALIFORNIA BAY-DELTA RESTORATION FUND

The 2012 budget requests $39.7 million for CALFED, pursuant to the CALFED Bay-Delta Authorization Act. The request focuses on the Bay-Delta Conservation Plan and interagency science efforts to address short- and long-term water resource issues. Other activities include a renewed Federal/State partnership, Smarter Water Supply and Use, and addressing the degraded Bay-Delta Ecosystem actions which include Federal participation in the Bay Delta Conservation Plan and interagency science efforts to address short- and long-term water resource issues based on the Interim Federal Action Plan. The CALFED Bay-Delta Program was established in May 1995 to develop a comprehensive long-term plan to address the complex and interrelated problems in the Delta region, tributary watersheds, and delivery areas. The Program's focus is on conserving and restoring the health of the ecosystem and improving water management, including Federal participation in the Bay Delta conservation Plan.

FISCAL YEAR 2012 PLANNED ACTIVITIES

BOR's fiscal year 2012 goals are directly related to fulfilling contractual requests to deliver water and power. Our goals also address a range of other water supply needs in the West, playing a significant role in restoring and protecting freshwater ecosystems consistent with applicable State and Federal law, enhancing management of our water infrastructure while mitigating for any harmful environmental effects, and understanding and responding to the changing nature of the West's limited water resources. It should be emphasized that in order to meet BOR's mission goals of securing America's energy resources and managing water in a sustainable manner for the 21st century, a part of BOR's programs must focus on the protection and restoration of freshwater ecosystems.

By the end of fiscal year 2012, BOR will enable capability to increase available water supply for agricultural, municipal, industrial, and environmental uses in the Western United States by 490,000 acre feet through its conservation-related programs, such as water reuse and recycling (title XVI), and WaterSMART grants. BOR will maintain dams and associated facilities in good condition to ensure the reliable delivery of water. It will maximize the percent of time that its hydroelectric generating units are available to the inter-connected western electrical system during daily peak demand periods.

Moreover, the fiscal year 2012 budget request demonstrates BOR's commitment to meeting the water and power needs of the West in a fiscally responsible manner.

This budget continues BOR's emphasis on managing those valuable public resources. BOR is committed to working with its customers, States, tribes, and other stakeholders to find ways to balance and provide for the mix of water resource needs in 2012 and beyond.

CONCLUSION

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

Senator FEINSTEIN. Thank you very much.

HARBOR MAINTENANCE TRUST FUND

I want to go back to the Harbor Maintenance Trust Fund because it seems to me that there is a catch 22, and that is that the trust fund is going to be used for other things and that there are no authorized widths or depths for dredging. Therefore, ports will be haphazardly dredged. I am sorry Senator Graham is not here because he was interested in the Port of Charleston. I do not know how you will select those ports that get dredging versus those that do not because there are no earmarks, and I think that is going to make it very difficult in the COE budget to know what you do and what you do not do. And so I am particularly disturbed by what I see coming to really handcuff the Harbor Maintenance Trust Fund.

Could you respond to that?

General VAN ANTWERP. First of all, Senator, I would like to say that the way that we prioritize our dredging is we look for a number of factors. We put them through a sieve of prioritization. What is the shoaling that happens in there? What is the commercial nature of that port or harbor?

As kind of an overview, we have 59 ports and harbors that carry about 90 percent of the waterborne cargo of this country. It is about $1.4 trillion through our ports and harbors. So there are some that are what we call very high-commercial-use harbors.

We take the navigation or the dredging dollars and spread them as well as possible over those with the highest traffic that we can. It is not haphazard in the sense that it does not have a prioritization scheme to it. It absolutely does. We do high use, medium use, and low use.

Senator FEINSTEIN. Right. You have 59 ports. You have a lot of work to do. Why would you want to have other activities take money from this trust fund, and what would those other activities be?

Ms. DARCY. Senator, the proposal that is being developed within the administration is looking at a number of things. It has not been developed yet. Some examples of things that might be looked at to receive some of this funding would be increased security needs at ports. We are trying to look at the Nation's ports as a whole system and what commercial navigation needs there are and what can be provided through the Trust Fund.

Also, the Trust Fund balance—as you noted, about $1.4 billion comes in annually, and then that is appropriated. So if you were concerned about the depletion of the balance that can be managed by the appropriations process.

Senator FEINSTEIN. Well, let me just say I hope so. You know, we have the largest port in the Nation. Forty-five percent of the container traffic comes in and out of the Port of LA—Long Beach. If you are not dredging that port to its fullest, if you scrimp on that, the whole thing shuts down. And so I do not understand using this money for security dollars. It seems to me keeping these ports viable is really an important mission, and it in itself absorbs all the money.

Ms. DARCY. When developing the proposal, all of those things will be considered. As I said, the proposal is still under development within the administration, and we will be considering these and many other factors.

Also, whatever proposal we develop will have to be developed with all of you because it would require legislative changes. So the Finance Committee would have to be involved, as well as the authorizing and appropriations committees.

Senator FEINSTEIN. How much surplus is in the trust fund?

Ms. DARCY. I think the current estimate is about $5.8 billion.

Senator FEINSTEIN. Five point eight billion dollars. And how much will be used on port dredging this year?

Ms. DARCY. The President's request is for $758 million.

Senator FEINSTEIN. That is all.

Ms. DARCY. Yes.

Senator FEINSTEIN. I am glad Senator Graham just came back because what we just learned was that there are $7 billion in the port trust fund for dredging, but only $700 million-plus is being put forward by the administration for dredging.

I guess what I am telling you as chairman—I do not know if others would agree with it—but that is not the right thing to do. You have to keep these ports viable. So if you have a response to that, I would appreciate it. If you do not, that is okay too.

Ms. DARCY. The proposal that is being developed is looking at the commercial ports from all of the needs, including navigation and including keeping them dredged at a viable depth.

Senator GRAHAM. Madam Chairman, could I just——

Senator FEINSTEIN. Yes, please. Go ahead, Senator.

Senator GRAHAM. As I understand it, there is a difference between maintaining a port, dredging, and actually a new start where you would deepen the harbor. Is that correct?

Ms. DARCY. Yes, Sir.

Senator GRAHAM. So I think I understand a little bit about their dilemma. Once you get a harbor at a certain depth, there is a trust fund to keep it dredged at that depth. What we are talking about in Charleston and Savannah and other places is actually going lower than the approved level, which would probably be a different exercise financially, is that correct General.

General VAN ANTWERP. That is correct.

Senator GRAHAM. I have learned more about this than I ever wanted to learn.

General VAN ANTWERP. You know a lot about this, Senator.

Senator GRAHAM. Yes, the hard way. I just want 40,000 bucks, $40,000. I am really cheap.

General VAN ANTWERP. To go deeper in a port, it is largely based on the benefit-cost ratio, its commercial use, and its national eco-

nomic benefit. This year, in new starts we are at 2.5 benefit-to-cost ratio for inclusion in the budget.

Senator FEINSTEIN. Trust me. He will want more than $40,000. The $40,000 is just a study.

All right, I think I have consumed enough time.

Senator Alexander.

Senator ALEXANDER. Thank you, Madam Chair.

I have actually learned a good bit about the Charleston Port as well over the last few days. And I know you have. We all feel very well educated about it. But it does not have a finer advocate than Senator Graham anywhere in the United States.

CHICKAMAUGA LOCK

Secretary Darcy, have you ever visited the Chickamauga Lock?

Ms. DARCY. I have not, Senator.

Senator ALEXANDER. Are you aware of its current condition?

Ms. DARCY. I have been briefed about its current condition. I know that the Chief and the Commanding General from the Great Lakes and Ohio River Division have been there, however.

Senator ALEXANDER. What are your projections about how long it can be reliably operated and maintained?

Ms. DARCY. I am not sure that we have those. Do we, General?

General VAN ANTWERP. Well, first of all, we think there is a low probability of failure right now, but we are watching it closely. We have gauges. We are watching that to give pre-notification if there is going to be a failure. There is no question we are watching the maintenance curve on this and it grows and grows every year, and at some point it goes to the point that you have got to make the improvements and you must fix it.

Senator ALEXANDER. Well, is it not true that it is in danger of a catastrophic failure?

General VAN ANTWERP. We feel the probability right now is low to moderate.

Senator ALEXANDER. How much maintenance funding will be needed to keep it open over the next 5 or 10 years?

General VAN ANTWERP. I would say about $2 million to $3 million every year. But I could see somewhere in the near term that it's going to be about $15 million per year because there are some things that are going to have to be done. That is if we just stay on the maintenance track, but $2 million to $3 million probably for the next 5 years each year.

Senator ALEXANDER. Have you considered asking the Tennessee Valley Authority to contribute funds to the replacement of the lock?

General VAN ANTWERP. Senator, I am not sure if we have had the discussion on whether they would want to provide funds for that.

Senator ALEXANDER. Finally, when is work scheduled to resume on the project?

General VAN ANTWERP. Well, right now we are in the process of building the cofferdam. In the fiscal year 2012 budget there is zero funding for it. At some point the project would cease and we would button it up and then wait for future funding to continue.

INLAND WATERWAY TRUST FUND

Senator ALEXANDER. Secretary Darcy, we talked a moment ago about the Inland Waterway Trust Fund. It is in a little different shape, is it not? It does not have much money in it.

Ms. DARCY. No, it does not.

Senator ALEXANDER. What does it have?

Ms. DARCY. I think the current balance that we have in our budget request for 2012 coming from the Trust Fund is $77 million.

Senator ALEXANDER. Is it true that that is about enough for one project this year?

Ms. DARCY. It is about enough for maybe three.

Senator ALEXANDER. Maybe three.

There was a plan that the commercial users of the Inland Waterway Trust Fund worked on and I believe worked on with the administration in which they basically worked out a proposal to increase the fuel tax on themselves on their own fuel in order to put more money into the Inland Waterway Trust Fund so that locks like the Chickamauga Dam and other needed projects could be done. But it is my understanding that you wrote a letter to Congressman Oberstar disagreeing with the plan last year.

Does the administration have its own plan to enhance the revenues in the Inland Waterway Trust fund? And when will we see the plan if there is such one planned?

Ms. DARCY. Senator, we are working with the Inland Waterway Users Board and the industry to develop a plan to increase the funding in the trust fund, as well as looking at ways to equitably charge the users in the future.

Senator ALEXANDER. Well, what was wrong with the plan that was rejected last year?

Ms. DARCY. There were many recommendations and some of them shifted the cost share burden to the general Federal taxpayer and took it away from the user. So that was one of the major objections.

Senator ALEXANDER. Excuse me. I was talking and I did not hear your entire answer.

Ms. DARCY. There were cost share changes developed that would shift a lot of the burden back to the general Federal taxpayer as opposed to the direct user.

Senator ALEXANDER. And when will your proposal be ready for us to see?

Ms. DARCY. I do not know, Senator, hopefully soon.

Senator ALEXANDER. Well, does "soon" mean a matter of a few months or a few years or what?

Ms. DARCY. I think it is in between. It is less than a few years and more than a few months.

Senator ALEXANDER. Well, there is a certain urgency to this when you have the users of the waterways, who are agreeable to contributing extra dollars to create projects that all of us believe are important for new jobs. I think the sooner, the better. So I would like to urge you to make it a priority and let us see it as soon as possible.

Ms. DARCY. Yes, Senator.

Senator ALEXANDER. Thank you.

Senator FEINSTEIN. Thank you very much, Senator.

I will read the list. It is Johnson, Landrieu, Cochran, Tester, Graham, Collins, Reed, Lautenberg and Murkowski, so Senator Johnson.

Senator JOHNSON. Thank you, Madam Chairman.

Commissioner Connor, I am extraordinarily concerned about inadequate funding request for ongoing congressionally authorized rural water projects. Two of these projects, Mni Wiconi and the Lewis and Clark regional water system, are vital infrastructure projects in South Dakota. In your budget request, the seven authorized drinking water projects would receive a total of just $35 million, with $15 million of that for operations and maintenance. That leaves about $20 million for construction for the projects. My understanding is that past BOR analysis shows that it would take $58 million per year in construction dollars just to keep up with inflation. The math here just does not work.

Especially for Lewis and Clark, the States of South Dakota, Iowa, and Minnesota, as well as the 20 member-cities and rural water systems, have prepaid $153.5 million which represents 99.7 percent of their cost share. They have prepaid their share in some cases a decade or more before they will receive water. The Federal Government has nearly one-half of its cost sharing remaining. The proposed fiscal year 2012 budget only includes $493,000 for Lewis and Clark which would not allow for any new construction.

Can you assure these cities and rural water systems that the Federal Government is, indeed, committed to finishing this important water project in a reasonable time? What is the plan for funding authorized water projects beyond this budget, because this request takes us and the taxpayers backwards on our investment, could you respond to that?

Mr. CONNOR. Yes, Sir, Senator Johnson.

Without a doubt, the rural water program is the program in our budget that has taken the biggest decrease in funding this year.

As to your specific question about whether the Federal Government is committed to these projects, we are, but it is going to be very tough in these tight fiscal times. I say we are because we invested more than $950 million in Recovery Act funds. We invested $200 million initially in these rural water projects, and then recognizing that they were a good investment, given ARRA parameters, we allocated another $32 million toward, I think, five of those projects near the end of last year. So we were trying to use those resources as best as possible to continue to move those projects out and serve additional communities. But in the priority order that we look at our budget and the resources we have available this year—they are good programs and good projects, but are just running short on the funds available.

We are going to go back and take a look pursuant to the 2006 Rural Water Act. We owe the Congress a report on the status of these projects and how we can look forward toward trying to complete them. We are going to get that done this summer. We will look at some additional criteria that we may want to add, and we will see what we can do as far as looking at the resources to try and make more progress in addition to the progress that we already made with ARRA funds.

Senator JOHNSON. Do you have any suggestions for what the 20 communities and rural water systems that exist and are using 99.7 percent of the cost share will do in the future?

Mr. CONNOR. Well, we will work with those communities and see how in these tight budget times we can make strategic investments and phase in incrementally those aspects of the project and serve additional people. I recognize that the Lewis and Clark project is having significant problems. Our primary focus, beyond once we address the operation and maintenance obligations that we have, is to try and complete projects, and we did complete the Perkins County project in South Dakota and we are trying to ensure we can complete the Mni Wiconi project in 2013.

Senator JOHNSON. Mr. Commissioner, I too am eager to see this important project completed, the Mni Wiconi project, and I appreciate that BOR has placed a high priority on the project. Unfortunately, construction funds are still falling short of what is needed to keep the project on pace and overhead and contract costs have hindered construction. It is my understanding that reduced funding will have an impact on the ability to complete this and other projects within their statutory timeframes. Will you review the project authorization and recent funding levels and work with the Congress to ensure that this project is completed as envisioned?

Mr. CONNOR. We will certainly work with you. With respect, the vast majority of our construction funds proposed for 2012 are for Mni Wiconi, but we still think that puts us in the area of being able to complete our obligations by 2013. But we will review that and we will definitely work with you, Sir.

Senator JOHNSON. My time has expired. Thank you.

Senator FEINSTEIN. Thank you very much, Senator Johnson.

Senator Landrieu.

Senator LANDRIEU. Thank you very much.

Let me begin, Senator Feinstein and Senator Alexander, to tell you how much I look forward to working with you on this subcommittee. It is a very important subcommittee for our Nation and particularly for the State that I represent. In Louisiana, we have the opposite challenges of some of the West Coast States. We have too much water, not too little water, and we are struggling to manage that.

Let me also add, General Van Antwerp, thank you for your leadership and for your guidance as we have designed and built some of the most sophisticated levee and flood control systems ever constructed in this Nation in the aftermath of the catastrophe, the biblical flood that we had when the Federal levee system collapsed 5½ years ago in and around the city of New Orleans, and we are on the back end of some of that.

And for the subcommittee, I want to thank all of you who were on the subcommittee before and will continue to serve because the $2 billion surge barrier, which is the largest surge barrier ever constructed in this Nation's history, is now up and operational. And I think we are going to be down there celebrating this milestone sometime in June. And I am pleased that we took several trips to the Netherlands to see the model of some of this technology. And I am pleased to share with the subcommittee, that having walked over the surge barrier and seen the construction of it in a detailed

brief, that you can be very proud of the engineering that has gone in.

Having said all those good things, let me say that there are still extraordinary challenges that are reflected in this budget. And I know that you are dealing with very limited resources. But I want to add my concern. And I have a question about this interior waterway trust fund.

Senator Levin and Senator Hutchison and myself and a few others have introduced a bill to attempt, Senator Feinstein and others, Senator Alexander, to capture the money coming into this trust fund so that it actually can be used for the processes in which it was intended, which is dredging and maintenance of these ports. I think the chairman is absolutely correct that for trade and for jobs, it is just critical.

So, number one, are you aware of the legislation, Madam Secretary? Number 2, is the administration going to support the basically capturing of these revenues to maintain these very important ports and channels?

Ms. DARCY. Senator, I am aware of the legislation to keep what is coming into the Trust Fund for the navigation purposes that it was intended. In our budget, the administration has proposed using some of those funds, as you know, for the continued maintenance of the navigation channels. However, we are looking at using that funding for some other——

Senator LANDRIEU. Well, I just want to lay a warning that there is a growing number of Senators on both sides of the aisle that want the taxes paid by this industry to be used for the purposes in which they thought they were being taxed, which is the dredging and keeping open of these ports.

ALLOCATIONS WITHOUT EARMARKS

I want to ask a question and also make a point that while 90 percent of the cargo—and the question following up the chairman—how will you allocate now that there are no earmarks or directives from this subcommittee allowed? And you said we will go by a formula. The big cargo ports will get, you know, based on how much cargo comes in and out. I just want to remind everybody on the subcommittee for the record there are ports that are important to the Nation that are not cargo ports. We would call them "energy ports." And if they do not stay open, nobody gets electricity, oil, gas, natural gas that comes into the ports along the gulf coast. The chairman might want to know we are not even included in the formula to begin with because unless you are a cargo port, you do not even get considered.

I tried to change that legislatively. You can imagine with natural gas coming into the country that port cannot get dredging because it is light. It is not heavy and it is not cargo. It is gas. It is liquid gas that comes in.

So this is a very interesting subject, and I just want to go on record. Senator Cochran knows some of this because, of course, he represents the State of Mississippi which has very similar concerns to the State of Louisiana. But that is one question.

And on the second, when we have, General Van Antwerp—my last question—a 100-year flood protection which we are trying to

achieve—the Netherlands protects their people 1 out of every 10,000 years. We are protecting our people 1 out of every 100. So we on the international scale have a ways to go. And I know you cannot compare apples to apples there.

But when we raise the levees to 100 years, my final question is, do you have money budgeted to maintain them at that, or what happens when there is settlement in those levees, because this is going to happen not just in south Louisiana along the gulf coast, but around the country. Is any of that budgeted in this budget to maintain those levees at the 100-year protection?

General VAN ANTWERP. Senator, for all the project features, once the ribbon is cut, it goes to local responsibility for the operation and maintenance of those levees and project features.

We are considering subsidence and sea level rise over time. In fact, we know probably in the next 50 years, many of those levees will have to be raised, some due to sea level rise, some due to subsidence. So that is in the plan. Of course, that is not budgeted 25 years out. For that, we will have to cross that bridge when we come to it because of the way we do the budgeting. But it is planned for.

And when we could, we purchased the real estate for, for instance, a wider base so that you could add to the height of that levee without having to get more real estate. If we could do that under the current funding, we did that. We are as ready as we can be, but we know we are going to have future maintenance of those facilities.

Senator LANDRIEU. Thank you.

Senator FEINSTEIN. Thank you very much, Senator Landrieu.

Senator Cochran.

Senator COCHRAN. Madam Chairman, I am pleased to join you in welcoming the panel to our hearing to review the President's budget request for the subjects that we are discussing.

I cannot help but wonder about how we reconcile the economic requirements of being a robust exporter of goods and services and commodities in the international marketplace with reducing the capacity to handle cargo on the Mississippi River in its ports and in other transportation modes which would get our goods and services to those who are buying what we are selling and what we are growing in terms of agriculture production in the lower Mississippi River Valley and way beyond.

We have up-to-date information about the fact that $100 billion in exports is traversing the Mississippi River annually. Industries in more than 30 States—we are not talking about just Mississippi and Louisiana. We have great interest in this subject. But industries in more than 30 States rely on COE to help maintain the river at authorized levels and depths. Insufficient dredging and an inadequacy of funding for these activities would inevitably result in restrictions on ship traffic and cargo travel. To put it in perspective, some shippers estimate that a 1-foot reduction in depth means a ship must reduce its cargo by 1,500 tons.

MISSISSIPPI RIVER AND TRIBUTARIES PROJECT

The objective of the Mississippi River and Tributaries project was to uphold, maintain, and improve the Mississippi River system and its levees that contain it. And in face of those national interests,

the President's budget request for the Mississippi River and Tributaries project is $210 million. That is $130 million below the fiscal year 2010 discretionary budget authority.

How are you going to cope with that reality? May I ask the panel if anybody has any suggestion about what you are going to do?

General VAN ANTWERP. Well, first of all, Senator, your observations are correct. We have 12,000 miles of inland waterways that are maintained by COE and it touches really 41 States in our Union and is so incredibly important. We understand that.

I think what you will see when we have to prioritize is we try and keep the depth. What normally happens is that you reduce the width first. It means that you cannot have ships passing and you have to stage them.

The other part is to keep the locks open. We have 241 locks on our waterways. They are 58.3 years old on average. So the maintenance requirements are increasing. We prioritize those by the greatest risk. We do treat our waterways as a system. We have to keep the whole system open. If we have one lock go down, it can impact the whole waterway.

Senator COCHRAN. May I also ask another question about the Mississippi Yazoo back water project. This is an issue that has been around since 1941. The Congress has authorized and funded these activities that are connected to this project in the lower Mississippi River delta. And we had a recent decision in Federal court that canceled a project, in effect, or a decision was made not to proceed with the project because of a decision made by a Federal court judge in Mississippi.

This still remains a very troublesome issue to resolve, and I bring it up simply because I hope COE and others who are interested in this will work with the supporters of the project to try to reconcile differences and to come up with an alternative that would be satisfactory with COE . I do not have any magic solution to suggest. We would be glad to work and cooperate with the administration and with others in the Congress who are interested in this, but I raise the question so we have it as the beginning of another effort.

Thank you.

Senator FEINSTEIN. Thank you very much, Senator Cochran.

Senator Tester, you are next.

Senator TESTER. Yes, thank you, Madam Chair.

First of all, I want to express my appreciation for you all folks being here today. Water is our most valuable resource and the management of it is critically important.

As the questions and the comments have been expressed here today, I have got to tell you; you guys are in a tough position. I mean, since this Congress started, we have been talking about deficit and debt, and we are giving you hell because you are not spending enough money. And I think that there has to be an awakening here, if we are going to invest in infrastructure, that investment means spending money. And I will tell you that water, whether it is where it flows into the ocean or whether it is at the headwaters in a State like mine, is very, very important, and if we do not have the infrastructure to manage it, we will not manage it and the country will be poorer for it.

Secretary Darcy, we have visited in the past about the great city of Great Falls in Cascade County and a couple levees that they have there that were built in 1975. COE has certified those levees up until 2009, and the Corps decided not to certify any more levees.

When you were last before the Senate, you told my colleague—the senior Senator from Montana—Max Baucus, that you would immediately look into the policy whether it should be changed, and that is whether FEMA either could certify or COE could certify to FEMA standards, one or the other. What have you found out?

LEVEE CERTIFICATION

Ms. DARCY. You are correct, Senator. I did tell Senator Baucus we would look into the policy and we have begun doing that. In the past, as you said, we certified levees and used Federal funds for that, and since 2008 we have not budgeted for that certification. We are looking at whether that is a possibility for us in the future.

Senator TESTER. And I will tell you that FEMA gives out the Provisionally Accredited Levee agreement. Okay, and they told Great Falls here about a month—you either got to sign it or forget it. COE has inspected in the past. Is there any potential you could harmonize your criteria? Have you done any work on that at all?

Ms. DARCY. We have done some work on it, but to be quite honest, it is not harmonized at this point.

Senator TESTER. I mean you fully understand the issue. You fully understand that there is not an engineering firm around that has an errors and omissions policy big enough that they will certify it. I mean, that is really what they have found out. And you know what? I think there are a lot of Great Falls, Montana up and down the different drainages in this country. And I will tell you that for that reason, Senator Baucus and I are dropping in legislation that gives COE not only the authority but the responsibility to certify those.

Once again, it may or may not cost money. You may be able to do it within your budget. You may need additional funds, but the fact is it has got to be done or folks are going to be put in flood plains. Businesses are not going to be able to be allowed to grow, some of the same things we heard earlier, only it just applies to this levee thing.

The intake dam, for either one of you, General Van Antwerp or Secretary Darcy, the work has begun rebuilding intake, and it is a rock ramp. I do not know if you are familiar with it or not. If you are familiar with it, I will not mess around anymore. But since you were here last year, the cost estimate jumped more than $100 million. The thing is never going to be built if it is $100 million, I will just tell you. Something is going to have to happen.

Can you give me your thoughts on why we had such a jump in cost on a project like intake?

YELLOWSTONE INTAKE DIVERSION DAM

General VAN ANTWERP. Well, I guess in a few words, it is very complicated. I will give you a couple of those complications, Senator.

First of all, the rock ramp at the depth and velocity that the pallid sturgeon needed was not working as we thought it would. We

have had to make modifications. The modeling indicated a need for a much flatter side slope than the preliminary design. So that is, in a nutshell, the biggest piece of this.

Senator TESTER. The word I heard is they are bringing in rock from somewhere else.

General VAN ANTWERP. Well, the contractor has to bring in the rock to do it. Where he purchases it from is up to the contractor.

Senator TESTER. And so it is an open-ended contract. I mean, if he wants to bring in rock from Maine, we pay for it?

General VAN ANTWERP. Well, he has to meet the design criteria with the rock he brings in. He has to do it under the bid that he proposed. I do not believe this is a cost-plus contract.

Senator TESTER. Okay, but what I am saying is we started out this project was going to cost—and I cannot remember—$15 million and now it is up more than $100 million.

Senator FEINSTEIN. Would you permit me?

Senator TESTER. Yes.

Senator FEINSTEIN. Why can you not have Montana rock?

General VAN ANTWERP. You could if it meets the specifications. I think our contractors certainly would go out and get it at the best place they could get it for the right price. They are on the clock also.

Senator TESTER. I appreciate that, Madam Chairman, because that is exactly the question. And I do not know if this is factual or not. I am told by the locals that they are bringing rock from outside the area when there is rock there that will do the job.

My time has run out, and I am going to check it off to people who have been here.

But the fact is that there has got to be oversight and there also has to be some common sense put to the analysis. Look, I am all about paddlefish. I love them, but are we saving one paddlefish? Are we saving 50 percent of the paddlefish that go up the river? What are we getting for that $80 million or $90 million or more in additional spending? That is really kind of important.

Before I go, thank you, General, for your service, I very much appreciate it. We are going to miss you. Thank you.

Senator FEINSTEIN. Thank you very much, Senator Tester.

Senator Collins.

Senator COLLINS. Thank you, Madam Chairman. I am very pleased that I am next because I feel I need to clarify that rock from Maine is not responsible for cost growth from $15 million to $100 million. We do have outstanding rock in Maine.

Senator TESTER. I hear it is some of the best in the world.

Senator COLLINS. It is Great granite, which we would be happy to share with your State. But I am positive that is not the cause of the problem.

I do have two Maine-specific issues that I want to discuss with our witnesses today.

KENNEBEC RIVER

Secretary Darcy, as I am sure you recall, I wrote to you last month about a problem with the Kennebec River. And this is a very serious problem. I am hearing a lot of serious problems today.

Earlier this year, COE conducted a sweep survey of the Kennebec River that concluded that the controlling depth is now an alarming 19.7 feet, significantly less than the authorized 27 feet.

Now, let me explain to my colleagues why this matters. Bath Iron Works, which builds naval destroyers, uses the Kennebec River as the avenue for getting the ships to sea. And in October, the USS *Spruance* naval destroyer is scheduled to depart Bath Iron Works for its home port in Virginia. The Navy is very concerned that the insufficient depth of the Kennebec River could cause that destroyer to run aground, and the Navy has said that the condition of the river constitutes an emergency and that it must be addressed in order to meet the scheduled delivery of this military asset. So this is truly a real challenge that is worrying to Bath Iron Works and to its customer, the Navy.

I understand that the cost estimate to complete the dredging is $1.6 million.

Complicating the issue, the timing of the dredging is very important to the lobster and clamming industries in Maine whose peak season is during the summer months, in the month of August.

In fiscal year 2006, it is my understanding that $630,000 was allocated for dredging activities on the Kennebec, but that that money, to my knowledge, has not yet been used for that purpose. Obviously, the ability of ships to enter and depart Bath Iron Works is of vital importance to our national security.

So I have two questions for you. One, do you expect a resolution of this issue in time for the scheduled departure of the Navy destroyer that is slated to depart in October? And second, is COE working with the local lobster men and clammers to minimize the impact on their livelihoods?

Ms. DARCY. Senator, yesterday I spoke with the Assistant Secretary of the Navy on this very issue, and we realize it is of vital importance not only to the Navy, but to our national security in order to have that ship delivered on time to Norfolk. I believe its schedule is September 1 of this year. We committed, along with the Assistant Secretary, to work together to find the money to get the dredging completed.

That said, in order to meet the September 1 deadline, we have a couple of challenges which you mentioned which include the clamming and the lobstering which the peak season is August, and it is in August when we would have to dredge. Our normal dredging schedule up there is usually between November and March. So we are sort of in a bind here.

We would have to get permits and work with the fishermen and lobstermen in order to get a schedule that works for them.

Senator COLLINS. I hope that you will work very closely with all of the parties, BIW, the Navy, the lobstermen, the clammers. It is too bad this was not done this past winter when there would not be the impact on the fishing industry and the lobstermen and clammers. We also need to accommodate Bath Iron Works.

I know my time has expired. Let me just very quickly say that COE met in Maine yesterday concerning the jetty at Camp Ellis in Saco, Maine. This is more than 100 years old. It was built by COE before there was an understanding of the erosion impact of having this jetty. That is another issue that has been going on for a long

time. Each year I visit and see more and more danger to the homes along the shoreline, and I hope we can continue to work on that as well. We provided funding and there has been some progress, but we have got a long ways to go.

Senator FEINSTEIN. Thank you, Senator Collins.

Senator COLLINS. Thank you.

Senator FEINSTEIN. Senator Graham, you missed your time, but I know you are lively and a little spirit every now and then would not hurt.

Senator COLLINS. And I am boring.

Senator GRAHAM. No, you are not boring. You are just from Maine.

Senator GRAHAM. You are polite and kind.

Senator COLLINS. I will leave it at that then.

Senator GRAHAM. Yes.

I was over nominating a judge for the Fourth Circuit, and I may be the only guy in the history of the Senate to nominate a judge and put a hold on him all at the same time. So it has been a strange weekend.

Secretary Darcy, the Panama Canal is going to be deepened in 2014. Is that correct?

Ms. DARCY. That is the plan, yes, Sir.

Senator GRAHAM. The plan is to deepen the Panama Canal so that super cargo ships can pass through the canal. Is that correct?

Ms. DARCY. Yes.

Senator GRAHAM. These are ships a lot bigger than we have today.

Ms. DARCY. Many of them will be, yes, Sir.

Senator GRAHAM. It is going to change shipping as we know it.

Ms. DARCY. I anticipate that.

FUNDING HARBOR DEEPENING

Senator GRAHAM. So there are certain ports that are in existence today that are going to have to adjust their depth to accept these ships. Is that correct?

Ms. DARCY. Yes.

Senator GRAHAM. One of them is Charleston.

Ms. DARCY. Yes.

Senator GRAHAM. I think everybody realizes that. But it is just not Charleston. And if shipping is going to change and we are going to meet President Obama's goal of doubling exports in 5 years, which is a great goal, we better have the infrastructure to make that a reality.

So, Madam Chairman, you, your staff, Senator Alexander have been absolutely terrific and helpful. We have got a dilemma. In the 2011 budget, there was no money set aside by the administration to conduct a study, and as I understand the way you deepen a port, there are three phases: the study phase, the design phase, and the construction phase. Is that correct?

Ms. DARCY. Yes.

Senator GRAHAM. And the Congress has to authorize these studies for you to move forward. You just cannot do this on your own. Is that correct?

Ms. DARCY. Yes.

Senator GRAHAM. So what we have tried to do is find a way to allow the study in 2011 to go forward. And it is a 3-year process where the study goes on for 3 years, and after the study is done, the design phase kicks in. That is about $25 million to $30 million, and the construction to deepen the harbor to 50 feet, what we anticipate would be the depth to receive these ships, is several years, about $350 million. And there is a cost-sharing agreement between ports and the Federal Government. Is that correct?

Ms. DARCY. Yes.

Senator GRAHAM. So my dilemma is that I have no vehicle to allow the study in 2011 to go forward. It is a scoping study. It is about $40,000 on the Federal side. The port in South Carolina is willing to pay the Federal Government's share, but we literally cannot. So everybody on this subcommittee has been helping me, and I am talking to the administration about a way forward.

But beyond Charleston, do we have a vision as a Nation as to what ports should be deepened to accept these ships? And is there a financing plan in place?

Ms. DARCY. No, Senator, we have not done a nationwide study to evaluate which ports should be deeper.

Senator GRAHAM. I would like to recommend to this subcommittee this would be a good use of our time to look as a Nation what does it mean for these ships to come through the Panama Canal, what does it mean to traffic on the Mississippi River, and try to make a good business decision.

I am willing, Madam Chairman, to allow COE to decide whether or not to spend money on Charleston's deepening if it makes sense from a national perspective. But since that system is not in place, I have to protect Charleston. And as you mentioned, there is a lot of money not being utilized. So we need to look at that account.

But, Secretary Darcy, could you propose to this subcommittee a plan, General, that would allow you to make an assessment of what ports need to be deepened based on the Panama Canal situation? Have you all done anything along those lines? Would you be willing to submit a plan to us if I ask you?

Ms. DARCY. We would have to be directed and funded to do so, Senator.

Senator GRAHAM. That funding problem.

I would just ask the subcommittee to look into this situation because as a Nation we do not have the infrastructure to basically accept ships that are going to be the standard for the future, and if President Obama's goal of doubling export is to be achieved, as Senator Alexander said, shipping is the key way to get goods throughout the world.

In South Carolina, BMW makes cars. We call it "Bubba Makes Wheels." But there is a BMW plant in Greenville/Spartanburg, South Carolina where we have shipped more than $4 billion worth of cars made in South Carolina throughout the world. And the port in Charleston is responsible for 1 in 5 jobs in South Carolina. I bet you that is true in places in California. I know it is true in Mississippi and Alabama.

So let us look at what we should be doing as a Nation, General, and make a business decision. I am willing to let merit take over if we are all in the same boat together. So I will end this discussion

with the idea of please, for God's sakes, help me find a way to do the scoping study in 2011, and we will look at a system-wide approach beyond that.

General, do you have anything to say?

General VAN ANTWERP. Yes, Sir, if I could just respond quickly.

We have six ports that are moving to the 50-foot depth. That is what you will need to come fully loaded through the new Panama Canal. We also have seven studies of deep water ports, which Charleston is if we get the feasibility dollars to do it, that have potential. With Charleston being 45 feet now, what would it take to go to 50? What is the benefit-cost ratio? We do have a lot of knowledge of how the ports are intertwined because you may not have to come in full from the Panama Canal if you have already offloaded some to go to the next port, the next port. So it is a system, and we can take that on if funded to do so.

Senator FEINSTEIN. Thank you.

Let me say this because I spoke to Senator Alexander. We will put report language in our bill to indicate very strongly our view which is that we do not believe money should be taken from this trust fund for other use. All anyone has to do is go to the Port of Hong Kong, go to any other major port to see how out-of-date our ports are. If we are going to compete internationally, we have to have a modern infrastructure, and the ports have to be consistently dredged.

So I think we will have some very strong language in our bill, and I want to say to the administration I will do everything I can to prevent that trust fund from being eroded with other activities.

Next is Senator Reed.

Senator REED. Thank you very much, Madam Chairman.

I want to welcome all the witnesses. I particularly want to welcome General Van Antwerp, Bob, thank you for your extraordinary service—you and your family—to the Army and to the Nation. Although the General looks much younger than I, we were contemporaries at West Point. So it is good to see you. Clearly his talent was recognized early on at West Point. I am in another line of business and that speaks for itself.

Now, let me continue. I want to thank you, both Secretary Darcy and General Van Antwerp, for the extraordinary response of COE of Engineers to the floods last year in Rhode Island. Your New England district personnel were incredibly active, hands-on, great initiative. They were particularly helpful in prioritizing dredging at the Patuxent Cove which would now allow for freer access of water from our systems into Narragansett Bay. And they have conducted reconnaissance studies. They have taken really this issue on. So can you accept my compliments and pass them on to those extraordinary public servants? Thank you.

CONTINUING AUTHORITIES PROGRAM

Let me focus on a series of issues, Secretary Darcy, the continuing authorities programs. I found them to be very useful, particularly the 205 Continuing Authorities Program (CAP), one of the programs that deal with flood control. And I have noticed that in the President's budget, there is the proposed elimination of four ex-

isting CAP's, and then the reliance on transferring funds to fulfill the obligations of some other CAP's.

Can you comment on the CAP activities, the proposed changes, and how would it affect flood control?

Ms. DARCY. Senator, you are correct. We did make a proposal in this budget to use some of the existing funds in the carryover programs from one CAP program to another. I think it is $23 million. We are going to use that carryover money for other programs. And in looking at tough budget decisions and directions from the Office of Management and Budget, we had to make some choices, and we looked at the CAP programs.

The 205 program is one that is going to continue to be funded with carryover funds in this budget. CAP programs are smaller projects that do not need individual authorization or Chief's Reports, and there are certain thresholds as to how much Federal funding can be spent on those. They have been very effective especially in small States like Rhode Island. We will continue to fund those in this President's budget, but some of the others, like the small harbors money, are going to be cut. We are going to continue to fund those programs and they are prioritized within the region.

Senator REED. Well, I appreciate that with respect to the 205 program.

One of the other programs is the 103 CAP which does a lot with respect to coastal erosion, and we just had a recent report that 68 percent of the beaches in New England and the mid-Atlantic, basically the whole northeast coast, are eroding on an average of 1.6 feet a year. And in towns in Rhode Island—and this reminds me of a great story. Senator Theodore Francis Green was asked the size of Rhode Island. He said it depends, on what, and he responded, high tide or low tide.

So 1.6 feet a year is an important metric to us, and that 103 program I believe is one that is scheduled for elimination. So it begs the question how do we deal with this multi-State erosion problem along our beaches.

Ms. DARCY. I think it needs to be looked at as a system, as you said, with each of the beaches. We have money in the budget for beach renourishment projects. It is something that we are carefully considering when we make the budget proposals.

Senator REED. Thank you very much.

Madam Chairman, thank you.

And once again, thank you for your great assistance in our flooding. Thank you.

Senator FEINSTEIN. Thank you very much, Senator Reed.

Senator Lautenberg.

Senator LAUTENBERG. Thanks very much, Madam Chairman.

I listened with interest to your response to questions. I must say you are staying up-to-date and I wish that you had more money to stay up-to-date more with. But the fact of the matter is that we in New Jersey have lots of respect, but also need, if I might say, from COE.

PASSAIC RIVER BASIN

By the way, General Van Antwerp, I spent part of my military career in Antwerp, Belgium during the war, and I always had a good feeling about that city and we have about you as well.

Last month, I toured the Passaic River basin in New Jersey following a severe storm and saw the devastation firsthand. There is a dispute here between the communities. Local communities in that area believe that flood gates at the Pompton Lakes Dam have led to increased flooding in downstream communities. And an independent consultant has been brought in and is investigating the matter. I was there during the heavy stage of the flood, and the communities downstream were deeply in trouble because of the flooding.

What has COE done to address this issue? Will it take in local concerns as the study moves forward?

General VAN ANTWERP. Absolutely, Senator, we will take those local concerns into account. We want total visibility on this. We welcome the other review of this also.

Senator LAUTENBERG. I hope so because something does not work, as is visible, when it is heavy weather.

Secretary Darcy, I am encouraged by the close cooperation between COE and the New Jersey Department of Environmental Protection to try to work toward a comprehensive plan for the Passaic River basin. However, the re-evaluation study is expected to cost COE $7.5 million over the next 3 to 5 years. Is COE committed to requesting funding for this project in the future years?

Ms. DARCY. Senator, we have not included money for it in the fiscal year 2012 budget.

Senator LAUTENBERG. Well, we are going to need your support in getting this study done. The Passaic River has been a place with constant flooding and problems that result from that.

I was pleased to see that your budget request included funding for the Port Monmouth beach project in New Jersey. In the past, coastal projects have typically been added as earmarks during the appropriations process rather than being in the budget request. Well, with earmarks on their way—they are at a moratorium now—how does COE plan to address the need for coastal storm damage reduction projects as it writes a work plan for the rest of this year and looks ahead to future requests? How do we get it done?

Ms. DARCY. As far as the work plan that we will be required to write for the rest of this year, we will look to fund projects that are currently in the budget and then, with any remaining funds, look to prioritize other ongoing work.

Senator LAUTENBERG. I have a couple of other questions that I want to submit for the record.

But I want to ask you this. When I look at the budget that is requested for 2011, I see that there has been less money requested for fiscal year 2012 than we actually had with fiscal year 2011. I do not want to put you on the spot, but I do not think that is because there is less need. I do not know whether you are at liberty to say whether or not more is needed than we have presently allocated for the projects that you have requested or are underway.

Ms. DARCY. Senator, we are operating within the fiscal climate that we are in, and this budget is what the President believes will allow us to sustain our missions.

Senator LAUTENBERG. Thank you very much.

Senator FEINSTEIN. Thank you very much, Senator Lautenberg.

Senator Murkowski.

Senator MURKOWSKI. Thank you, Madam Chair.

And thank you to those who are appearing before us today, for your testimony, for your work. We appreciate it.

FUNDING DECISIONS

Clearly a great deal of interest in this, Madam Chairman, ranking member. I think it is not just because you are such wonderful leaders here on this subcommittee, but I think it speaks to the issue of what we are dealing with and the significance of not only ports and harbors, but our reality that in this new world of no earmarks, how we are able to help advance those projects, whether it is as Senator Graham has indicated, whether it is as Senator Lautenberg has indicated, or whether it is as it relates to the small harbors issues, as I will bring up. These are very critical issues for us, and I think we recognize the investments to our communities that are made when COE does the job that we ask them to do.

Secretary Darcy, the question that I have for you—a series of questions here. We know that in recent years at least, we have seen the Congress increase the amount of funding for the construction of ports and harbors above the President's request. That was true in fiscal year 2010. In total, the Congress funded 350 studies and projects. The President had budgeted for 153. Now in fiscal year 2012, COE is budgeted for 149 projects, and as I mentioned, we are operating under this earmark moratoria.

The question that begs here is under this budget what happens to the 350-some-odd projects that were earmarked by the Congress in fiscal year 2010, and then going beyond there, what are the consequences for the local sponsors who have provided the matching funds from the municipal bonds or from the State funds? Where are we at this point in time with these projects that the Congress had said these are important, we need you to advance? Where are we now?

Ms. DARCY. Senator, in making our budget priorities, we look at the benefits to the Nation of all of these projects, and that is how they compete and that is how we will budget for them.

Senator MURKOWSKI. Well, I appreciate benefits to the Nation. We think that in Alaska we have a lot of benefits to the Nation. I know that Senator Collins feels that her ports and harbors have a lot of benefit to the Nation as well. But you are going to have 26 States, including Alaska, that are budgeted for O&M money, operation and maintenance money, in fiscal year 2012, but who will receive no funding for general construction because of these low cost-benefit ratios. And as you go around the dais here and look to the States that we represent—Alaska, Alabama, Mississippi, Hawaii, South Dakota, Iowa, Montana, Kentucky, Maine, and South Carolina—would not receive any construction funding.

So what do we say, that these 26 States are not significant or important to the national interest? We have had conversations

about how the smaller harbors may be a lower priority from a national perspective, but in terms of what they contribute to a regional economy, they are extraordinarily important. So we have got a system where we have a cost-benefit ratio system that will never allow many of these States to ever get into the funding stream when it comes to general construction.

So if we do not have earmarks, what can the Congress do to ensure that these States that are not budgeted for construction can somehow or other continue to get funding? Because I will not accept the conclusion that 26 States, including Alaska, will just not see general construction money. That is not right.

Ms. DARCY. Senator, we do not do our budgeting on a State-by-State basis.

Senator MURKOWSKI. I understand that.

Ms. DARCY. We do it on a project-by-project basis. That is where the prioritization and the value come in.

As far as what can be done in the nonearmark era, there are any number of ways to look at a budget, whether it is a systems-based budget or a line item-based budget. That is something that the Congress may need to look at.

Senator MURKOWSKI. I think the Congress needs to look at it. I think we need to work with COE because I think this has led us to a result that whether you are from Alaska and trying to get a small harbor going or Senator Graham from South Carolina that is trying to get Charleston advancing—we have got ourselves in a bit of a mess here. And I am looking for your suggestions as to how we resolve it because just going to old rhetoric, which we operate off of this cost-benefit ratio and that is the standard and that is the way it is, is not acceptable.

General, do you have comment you would like to make?

General VAN ANTWERP. Yes, Senator. First of all, we would love to work with you on the priorities. I think if there are no earmarks, then we go back to the priority scheme. So we could work together on how the priorities are set, and maybe it is different than we do right now. Right now it is very heavily weighted to the National Economic Development benefits, and so that is your benefit to cost ratio that you have been speaking of. I think there are ways to look at the priorities of the whole system where portions of it could be reallocated based on a certain set of priorities that were set.

Senator MURKOWSKI. Well, I appreciate that. I think that is something that we need to do and look forward to working with you as well as those of us here in the Congress.

I do have a series of questions regarding CD–5 and the failure by COE to be able to proceed with the bridge over the Colville River. I recognize that I am over my limit, though, but I would like to pose a series of questions to you for a response.

Thank you, Madam Chair.

Senator FEINSTEIN. Thank you very much, Senator Murkowski.

Senator Harkin.

Senator HARKIN. Thank you, Madam Chair. Thank you very much, Ranking Member Alexander.

LEVEE CERTIFICATION

Secretary Darcy, across the country, a number of cities are facing decertification of their levees as a result of higher estimated water flows, one of those cities being the capital city of Iowa, Des Moines. In the Des Moines case, the loss from a 100-year flood is very likely to be well more than $1 billion. And that does not count the considerable loss of new construction and economic development that will occur with decertification. In other words, if they decertify the levees, there are big areas that are now being opened up with new expressways and areas for economic development. That will probably come to a screeching, grinding halt if these levees are decertified.

Now, the city of Des Moines and other cities I am aware of across the country cannot afford to wait over a decade for studies and remediation. In Des Moines' case, the possible solutions are complex, including possible modification of COE dams, the raising of bridges, the widening of streams, the raising of levees. Each year of delay is a significant loss in economic development and jobs, higher flood insurance costs and again also possible flood damage. We really need COE to move forward with these complicated studies in Des Moines which I am told and understand is within your existing authorities.

COE has unique and needed capabilities. That should include allowing the local sponsor, for example, to contribute funding up front with the understanding that if a project develops, those advances would be appropriately counted as a match. Again, so we do not lose crucial time, we are trying to get up-front money which the city of Des Moines is willing to do in order to collapse that timeframe, but again those monies then would count as part of their match so they do not lose this whole timeframe.

So I hope that you will support having these studies move forward as efficiently and quickly as possible and, as we wait for regular funding, that you do all you can to approve the use of city-advanced funds, which I was just talking about, with the agreement that those local funds would count as a match against approved activities that would come on later on.

Can you respond to that statement, because I have been meeting with the people in Des Moines. They are at a critical juncture right now. If we do not get something done within the next about 18 months, we are facing some real economic problems in the city of Des Moines. So, again, my question is, in your jurisdiction could we get the city of Des Moines to advance those funds, get those studies collapsed, do it in a hurry, while we wait for regular funding?

Ms. DARCY. Senator, if we have a written agreement with the local sponsor and COE, it is my understanding that we can accept up-front money and provide further credit.

Senator HARKIN. You could if there is an agreed plan.

Ms. DARCY. Yes, at the beginning.

Senator HARKIN. With the city of Des Moines.

Ms. DARCY. Yes, with the local sponsor.

Senator HARKIN. If the city of Des Moines comes up with that, how long do you think it would take to get that approved? I mean is this something we could look at in a very short timeframe?

Ms. DARCY. I believe so, Senator.

CEDAR RAPIDS, IOWA

Senator HARKIN. Okay, that is good. That is very good.

Well, okay, we have one other city in Iowa that is on a river and it gets flooded. It is called Cedar Rapids. You know that very well. And first of all, I commend COE for its rapid movement of the Chief's report on Cedar Rapids. It has been very good, General. But as you know, the findings propose a project based on traditional criteria. I know you are probably aware of this. It is one side of the river. General, you know that very well. The other side of the river, more than 3,000 homes, and would you not know it, these are families with lower incomes than those that are on the side to be protected. So it is always those with lower incomes—they do not get any help.

I think the philosophy of the December 2009 proposed national objectives, principles, and standards for related resources should be followed in a case like this. The Cedar Rapids waiver request will soon come to you to provide protection on both sides of the river. I urge you to grant it. That is the correct position on an equity and environmental justice basis. Cedar Rapids is a major engine for the economy of all of eastern Iowa, and it will be severely damaged with the lack of investments without a project on both sides of the river.

I also hope that you will support allowing Cedar Rapids to count all of a sponsor's traditional costs that it incurred since the date of the flood.

So that waiver request will be coming to you soon.

UPPER MISSISSIPPI RIVER NAVIGATION

Last, Madam Secretary and General, I want to talk a little bit about the upper Mississippi navigation. We spent and I spent 20 years working to get this final plan approved for the upgrading of the locks and dams on the upper Mississippi. We finally got it done. And now I am worried about the ability to move ahead, both to maintain and move forward on the improvements in that navigation system.

Of course, I was disappointed with the level of support in the fiscal year 2012 budget proposal from the White House, and I think it is clear that the budget agreement that we are probably going to agree on is going to put some real strains on the ability of COE to move forward. Madam Chair, I will be submitting some questions for the record in this regard.

My point is this. I think that there is a need to increase funding available the Inland Waterways Trust Fund. I was pleased with the National User Board's proposal which recognized that need but also called for both more efficient processes regarding navigation construction and the reworking of the definitions of what is considered navigation. I can tell you that behind every dam—well, I cannot say "every". I have not visited them all. Behind most of them are great recreational areas, a lot of fishing. Even in some of the places down the Mississippi, you would be amazed how many people go out there just to bird watch and watch the bald eagles.

Have you watched that Web site, the Decorah Eagles, by any chance? No. There is a Web site. It is called Decorah, D-e-c-o-r-a-h. You have been there a lot of times, but it is called Decorah Eagles. What they did, Madam Chair, someone—not someone—an entity, an environmental group, set up a web camera in a tree focusing on an eagle's nest.

Senator FEINSTEIN. I saw it. It was wonderful.

Senator HARKIN. Is that not wonderful?

Senator FEINSTEIN. Yes, and the baby.

Senator HARKIN. And the little baby is being hatched and all that and everything.

Senator FEINSTEIN. It is great.

Senator HARKIN. Hundreds of thousands of people around the world watching it.

Well, along the Mississippi River, people are doing that. They are going out watching birds. There is a lot of recreation taking place.

It seems to me that it should not all be counted as navigation. It should be counted both as recreation and as navigation.

And we ought to allow for an increase in the taxes that even the barge people say they want to do but they want to make sure that it is used for navigation and to make sure that the recreational uses behind those dams and stuff are funded as recreational uses and not as navigational uses.

So I just wanted to say that. Like I said, rather than getting into it here, I will submit for the record a number of questions.

But I just want to thank you very much, Madam Secretary, and General, thank you so much for all you have done. Cedar Rapids—you have been great in response and helping us out there. Believe me I know the constrictions on that other side of the river. I understand that. I am just trying to see what is equitable and what could possibly be done to help a situation that cries out for some kind of justice here. So however we can work that out, I would sure appreciate it. Thank you both very much.

Thank you, Madam Chair.

Senator FEINSTEIN. Thank you very much, Senator Harkin.

To our witnesses, you have had 10 percent of the Senate here today, 10 people. That is very unusual for a subcommittee meeting, and I hope you interpret it as compliment and I hope you interpret it as the interest with which we hold your areas of expertise.

DAM SAFETY

I have a couple more questions. One is on dam safety, before I turn to BOR who has been sitting there so quietly, I want to say a couple of things.

There is a 90 percent chance in California that within the next 30 years, we have a major earthquake. It is not a chance. It is a probability. We are in the Ring of Fire. We have seen the Ring of Fire with huge earthquakes in South America, Banda Aceh, Christ Church, New Zealand, and all the way up. So there is a lot of reason to be concerned.

We have in California three dams—I do not know, but the words I have been given are "most at-risk" category, whatever that means. One, Lake Isabella, has been under study for 6 years.

Now, the first question is what qualifies a dam for the "most at-risk" category, General.

General VAN ANTWERP. Senator, we look at a number of factors. Probably the most damaging factor would be whether there is material coming through the foundation of that dam. We call that piping in the engineer world. And most of the DSAC–1 dams, which is the category you were mentioning, where it is urgent and compelling that we fix them now, have that problem. They are bringing material through the foundation. So we know there is erosion taking place. That is the most critical factor.

We have a number of those under rehabilitation right now as we speak.

Senator FEINSTEIN. Well, how long do you have to study them, 6 years for Lake Isabella?

General VAN ANTWERP. Lake Isabella—we have looked very closely at that. As we look at it, we think we are going to be fine with that if we stay on the schedule we are on.

Senator FEINSTEIN. Which is what?

General VAN ANTWERP. The schedule right now is that we are going to fund that at $7 million in fiscal year 2012, which is the capability. We have a wedge of funding that is not totally visible to you all for dam safety. We are funding that project to continue on the schedule and we will make the repairs necessary when they come. We have $7 million in fiscal year 2012 for that.

Senator FEINSTEIN. How about the other two most at-risk dams?

General VAN ANTWERP. The Success Dam is budgeted with $18 million in fiscal year 2012, so that one is also on schedule. What we are going to do there is acquire properties and we are on track with the $18 million. I think on both of those dams, we definitely have our eye on them and we are aware of their condition.

Senator FEINSTEIN. And the third one?

General VAN ANTWERP. The third one. Which one is that?

Senator FEINSTEIN. I am trying to remember which one it is and I cannot remember.

General VAN ANTWERP. Martis Creek. We have our eyes on that too. This is Mr. Steve Stockton who is our Director of Civil Works. He knows these in and out.

Senator FEINSTEIN. And so, on that one?

General VAN ANTWERP. I am not exactly sure. I do not have the notes on where we are.

Senator FEINSTEIN. Would you let me know, please, because, obviously, I am vitally concerned.

General VAN ANTWERP. Right.

Senator FEINSTEIN. Now, let me turn to BOR.

You have proposed a new account for Indian water rights settlements. The question is how much mandatory funding accompanies the $51.5 million discretionary funding you have proposed for fiscal year 2012?

Mr. CONNOR. The $51.5 million was basically designed to meet the capabilities that we have for 2012 with respect to the four new settlements. And what we are trying to do there, although there is a significant amount of mandatory funds being made available for those four new settlements, they also include a substantial amount of associated appropriations needs. I think to the tune of about

$700 million was provided in mandatory funding, but with respect to BOR, we will still, for these four new settlements, about $250 million in discretionary appropriations is needed. So what we have tried do is to try and get the appropriations process going to cover that need.

With respect to the new account, we have also incorporated the Navajo-Gallup pipeline project in New Mexico, the Navajo settlement in the San Juan River basin. There are about $25 million in that account, I think we are going to ramp up to a capability in 2012 on the Navajo project to something around $70 million to $80 million. So there is a substantial ramp-up that is going on in that project itself, and so it will be a combination of those appropriated dollars, the $25 million, in the new account, plus we have been provided mandatory funds of $60 million in the Claims Resolution Act of 2010.

Senator FEINSTEIN. Do these settlement agreements require funding annually?

Mr. CONNOR. They do not necessarily require specific funding annually. Some of them do. For instance, the *Crow* settlement contemplates an immediate distribution of $4 million I believe.

Senator FEINSTEIN. Are they all water systems?

Mr. CONNOR. They are a combination of trust funds, which will come out of BIA accounts and infrastructure which are primarily designated for BOR. So we have municipal and industrial (M&I) systems, drinking water systems, but we also have some rehabilitation of existing irrigation systems that are part of the projects.

Senator FEINSTEIN. So you believe they can be funded without taking the money from anywhere else.

Mr. CONNOR. Right now, through the new account, plus the combination of mandatory funds that we have, for the next few years we think we can manage that situation. But once again, overall, we are still looking at $250 million plus another $500 million for Navajo. We are looking at, through appropriated dollars over the next decade, about $750 million worth of appropriated dollars that we have got to find somewhere.

Senator FEINSTEIN. I want to thank you for your sensitivity to the South-of-Delta water issues. I was very pleased to learn that BOR has increased the allocation for farmers from 65 percent to 75 percent last week. I know these followed two previous rounds of increases. However, as you know well, there is still a lot of consternation in the central valley when most other projects are receiving 100 percent, and we have got a bumper crop of water and it is still the South-of-Delta that does not have 100 percent.

In your judgment, how close to 100 percent can this region get with all the water that is now available?

Mr. CONNOR. Well, there is still a chance to get up to that 100 percent level. I would like to provide some perspective, though. Since 1990, we have only hit that 100 percent level South-of-Delta three times. The average over that 20-year period is 62 percent to South-of-Delta allocation for agriculture.

Senator FEINSTEIN. I actually got out the contracts and read them, and it is interesting because they are contracts with all kinds of hedges in them because generally when somebody signs a contract, you expect to be bound by the terms of the contract. In

this case, the Government is not really bound by 100 percent water allocation under the contract. I do not know that people know that, and I think it is very hard. And I think when farmers look around and they see other water districts with 100 percent, it becomes even harder. And I understand there are special exigencies for the South-of-Delta, but try and sell that. It is unsalable, and I think you know that.

Mr. CONNOR. Yes, absolutely. There are priorities. There are water rights conditions and the new environmental obligations that we have. All of those factors have affected that South-of-Delta allocation. But you are right. The expectations are there because of the contract quantities, and notwithstanding the fact those 20 years of experience show us that there is not enough water to consistently meet that 100 percent need, there is still an expectation out there, particularly this year when the snowpack and precipitation is 160 percent of average statewide.

Senator FEINSTEIN. Well, I know you are sensitive, and you have been just great and it is very much appreciated. I know how tough it is. Whatever we do, it is not enough, but at least we are trying. So thank you.

Perhaps the biggest effort in California is the Bay-Delta conservation plan and what might come from it in the 10- to 15-year build period after. Can you provide an update on BOR's efforts to develop a programmatic EIS for the Bay-Delta conservation plan?

Mr. CONNOR. Yes, Senator. Over the last 4 or 5 months, there has been a very concerted effort by BOR, in concert with the other Federal regulatory agencies, Fish and Wildlife Service and NOAA Fisheries, working with the California Fish and Game and the Department of Water Resources. We are calling it the "five agency process". And we have been led in that effort by Deputy Secretary David Hayes. And I think we have made a remarkable amount of progress in dealing with six major issues that are key to working through so that the State of California, which is going to be the permittee under the Bay-Delta Conservation Plan process, can go in and submit their plan with a reasonable expectation that we can work through those issues and get to a final permit. It is not predecisional. The regulatory agencies have made that very clear. But we are trying to get enough in the area so that there is a reasonable expectation of success.

We have resolved, I think, four of the six issues. We are working very hard over the next couple of months to resolve the last two, and hopefully beginning mid-summer, the State will be in a position to submit its plan which will kick off the Environmental Impact Statement/Environmental Impact Report process. A lot of the analysis is already being done waiting for the final plan to come in. I think there is still hope that within a year's time period, that there will be a draft on the street.

Senator FEINSTEIN. Another problem. Since 2007, quagga mussels have been inundating the Colorado River system. They were found within Lake Mead, and since then, everybody has been working to prevent them. I met with the metropolitan water district the other day. They were telling me how they had spent millions of dollars and these things are just in gobs along their lines. Each quagga reproduces a million mussels a year. You cannot kill them

with cold water. They have to go in and scrape feet of quagga mussels piled up. And if it infiltrates the water system, we have really got a problem.

How much activity within BOR is going on to really try to combat this mussel issue, because it is a huge one? The Met just e-mailed the staff. They spent $28 million total scraping these things off the pipes.

Mr. CONNOR. Yes. It is quite a problem and unfortunately, it is one that is spreading. And that is where our initial actions are right now. Our initial actions are to work very closely with the State agencies in trying to educate the public about the potential for transferring quagga mussels between bodies. Right now, we used, I think, around $5 million of our Recovery Act money just to do a broad survey west-wide of our various facilities to try and get a grasp on the scope of the problem, trying to educate people so that the problem does not increase.

With respect to actually dealing with them in the facilities that they are in, most of our activity has been related to research and development activity. We are trying to kill them through various means. We are trying to develop coatings that will maybe keep them off the infrastructure.

Senator FEINSTEIN. You mean by getting them high, Codeine?

Mr. CONNOR. No, coating—C-O-A-T.

Senator FEINSTEIN. Oh, I thought you said codeine.

Mr. CONNOR. It took me a second. I think that is good that I did not immediately react, coating.

Senator FEINSTEIN. Got it.

Mr. CONNOR. That will hopefully inform us about how we can keep them off of some of the infrastructure. But they are already there, and as Metropolitan Water District (of Southern California) well knows, they are investing a lot of their operation and maintenance funds right now just to try and control the problem.

Senator FEINSTEIN. Well, thanks to Senator Alexander and our work on Interior, Lake Tahoe, which we are trying to do some work on and save, which is one of two last remaining clear water lakes, huge lakes, is beginning to be infiltrated. So there is a boat boycott, and every boat prior to going into Lake Tahoe has to be specially inspected and washed.

So I do not know if you can come up with any of the things that can be done. They have to get in somewhere, and we have got to prevent them from getting in. I mean, with a lake that is relatively isolated, if these are carried like from Lake Mead on the bottom of a boat to Lake Tahoe, you can clean the boat. But we really need some help and Federal suggestions of what can be done because they are really going to destroy not only the Colorado water supply system, but also our Great Lakes.

Mr. CONNOR. Right. I agree. I think the inspection stations, the education process, everything we are participating in with our State partners in that effort, but it is a growing problem that we need to pay more attention to.

Senator FEINSTEIN. Thank you very much.

Senator Alexander.

Senator ALEXANDER. No thank you, Madam Chair.

Senator FEINSTEIN. No, thank you, you said, all right.

Well, let me thank everybody. Let me particularly thank our witnesses. I think this was a very useful hearing. As Senator Alexander whispered to me, I am glad I am up here, not down there.

At this time I would like to ask the subcommittee members to please submit any questions that they have for the record.

ADDITIONAL COMMITTEE QUESTIONS

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

QUESTIONS SUBMITTED TO JO-ELLEN DARCY

QUESTION SUBMITTED BY SENATOR PATTY MURRAY

Question. Assistant Secretary Darcy, I appreciate all you have done in your time with the Corps of Engineers (COE) and the good work of the districts that serve my home State of Washington. We are obviously facing very difficult budget times and unfortunately, the President's budget request reflects that for COE. Yet even as we face these hard times, COE has ongoing General Investigations that are routinely not included in the President's budget request, like the Elliott Bay Seawall GI or the Skagit River GI. Can you tell me how you plan to continue these important projects?

Answer. All projects and studies are evaluated and considered for funding. However, only the highest-priority studies from a national perspective are proposed for funding. The Army has undertaken a broad effort to review the scope of active studies to ensure resources are appropriately aligned to complete those studies most likely to result in a high-performing project. For example, as part of this effort, the Skagit River study will be reviewed this year.

The Army is working to finalize implementation guidance for section 4096 of the Water Resources Development Act of 2007, which includes the determination of the feasibility of reducing future damage to the Elliott Bay Seawall from seismic activity. A Feasibility Scoping Meeting is scheduled for the project this fiscal year.

QUESTIONS SUBMITTED BY SENATOR MARY L. LANDRIEU

COMPLETION OF THE LEVEE SYSTEM FOR THE GREATER NEW ORLEANS AREA

Question. On June 1, the city of New Orleans and the State of Louisiana will mark an historic and long-awaited milestone. The city that has given so much to this Nation—that is strategically located at the entrance to one of the world's largest river systems—will be protected against the ravages of a 100-year storm and flood event. The Corps of Engineers (COE) is to be commended for its work in completing this herculean task, but there are many questions left unanswered. Since the American people have invested nearly $15 billion in this effort, we have a serious responsibility to make sure this money is not wasted and that it will sustain a 100-year level of protection over the long term. I have a couple of questions on this point:

Ms. Darcy, there is clear precedent in law and regulation for COE to assume operation and maintenance of navigation structures in federally navigable waterways. If COE does not have the legislative authority to operate the newly constructed structures along the Gulf Intracoastal Waterway, will the administration support legislation to give COE this authority?

Answer. The hurricane risk reduction system in the Greater New Orleans area includes numerous floodgates, many of which cross roads, interstate highways, and navigation channels. The hurricane risk reduction floodgates crossing navigation channels are designed to have minimal interference upon navigation, unless there is a tropical event which requires their operation. Under current law, the Coastal Protection and Restoration Authority of Louisiana (LA–CPRA) is responsible for operating and maintaining all of the hurricane risk reduction system, including the floodgates. Two of the largest floodgates for the hurricane risk reduction system cross the Gulf Intracoastal Waterway (GIWW). Although these two surge gates are located across a Federal navigation channel, their purpose is to reduce the risk from storm surge and not for navigation. Requiring the State to be responsible for the

costs of operation and maintenance is in keeping with requirements of Public Law 99–662, Public Law 109–234 and Public Law 110–252, all as amended.

Furthermore, in keeping with the above legislative requirements, LA–CPRA has entered into Project Partnership Agreements and has agreed to be 100 percent responsible for the Operation and Maintenance of the hurricane risk reduction system project features. This applies to all features, including the pumping station and these two floodgates which cross the GIWW.

Question. I understand from local levee officials that in order to maintain the 100-year level of protection, future "lifts" to increase the height of the levees will be needed in certain areas of the system. This will be caused by the settling of the material used to construct the levee and could be needed as early as next year. Will the administration budget for these critical needs and if so, why not?

Answer. Public Law 109–234 and Public Law 110–252 authorized and funded COE to raise levee heights where necessary and otherwise enhance the existing Lake Pontchartrain and Vicinity project and the existing West Bank and Vicinity project to provide the level of protection necessary at the time of construction to achieve the certification required for participation in the National Flood Insurance Program (NFIP). Additional authority and funding would be required for the Federal Government to construct future levee lifts.

Question. What do you estimate these needs to be, and how will it affect the certification of the overall levee system in New Orleans?

Answer. The Greater New Orleans—Hurricane Storm Damage and Risk Reduction System will initially be accredited by the Federal Emergency Management Agency (FEMA) for a 10-year period. Current regulations require that FEMA to be notified if any part of the system fails to meet the certification requirements during the 10-year period.

Additional authority and funding would be required to pursue construction of the future levee lifts and other additional measures on the Lake Pontchartrain and Vicinity project and the West Bank and Vicinity project to sustain FEMA system accreditation and participation in the NFIP in the future.

The estimated cost for future levee lifts and other measures to sustain elevations necessary for system accreditation are not known at this time.

Question. The Harbor Maintenance Trust Fund is authorized under the Harbor Maintenance Revenue Act of 1986 (Public Law 99–662, title XIV), as amended. Revenue is derived from a 0.125 percent ad valorem tax imposed upon commercial users of specified U.S. ports and investment interest. These funds are intended for the operation and maintenance of our ports and harbors—critical dredging that keeps these centers of navigation and commerce open for business. More than $1 billion is collected each year, and the total estimated balance in the fund this year is more than $7 billion. We have all of these funds, yet our ports and harbors are in desperate need of dredging. Why does the Harbor Maintenance Trust Fund carry billions in surplus when our critical ports and harbors are in desperate need of dredging funds?

Answer. The balance in this trust fund, which has grown over a period of many years, reflects multiple factors, principally the value of goods subject to the harbor maintenance tax, the tax rate, the enacted spending levels, and the limitation in current law on the authorized uses of these receipts. In our view, the overall funding level that the Federal Government provides for maintenance dredging and related purposes should be determined independent of the level of the Harbor Maintenance Tax receipts. More specifically, the allocation of these funds should reflect consideration for the economic and safety return, as well as a comparison with other potential uses of the available funds.

Our investments in coastal port maintenance are directed primarily at providing operational capabilities and efficiencies. To make the best use of these funds, COE evaluates and establishes priorities using objective criteria. These criteria include transportation cost-savings, risk reduction, and improved reliability—all relative to the cost. Consequently, maintenance work generally is focused more on the most heavily used commercial channels, which together carry about 90 percent of the total commercial cargo traveling through our coastal ports. However, many ports will experience draft limitations on vessels due to channel conditions, at least during parts of the year.

While COE could spend more on harbor maintenance and related work, the amount proposed in the budget for this purpose, which is financed from this trust fund, is an appropriate level, considering the other responsibilities of COE for inland navigation, flood risk management, aquatic environmental restoration, hydropower, and the other Civil Works program areas. COE continues to develop analytical tools to help determine whether additional spending from this trust fund is warranted based on the economic and safety return, as well as a comparison with other

potential uses of the available funds. Dredging costs continue to rise due to increases in fuel, steel, labor, and changes in methods of dredged material placement. We recognize that this presents challenges in maintaining commercial navigation projects.

COASTAL RESTORATION AND PROTECTION—LOUISIANA COASTAL AREA

Question. I am very encouraged that the President requested construction funding for coastal restoration in Louisiana in his fiscal year 2011 budget. After decades of study and planning, we will finally be turning dirt to restore and protect our fragile coast. I understand that this represents 1 of only 2 new starts recommended by the President, but I want to emphasis how critical it is that we use these funds wisely and efficiently. Ms. Darcy, I understand that this is a programmatic funding request.

How does COE intend to capitalize on the fiscal year 2012 budget request and ensure that multiple projects have received the appropriate executive branch approval?

Answer. The President's fiscal year 2012 budget includes $10.6 million to begin construction under the Louisiana Coastal Area (LCA) ecosystem restoration program. The COE district office is working on several reports, and my staff is working with them to expedite the appropriate approval process.

Question. Also, which specific LCA projects will receive funding this year and the coming fiscal years?

Answer. Fiscal year 2012 funds will be used to continue construction of authorized restoration projects underway in fiscal year 2011 with reports that have favorably completed executive branch review, to initiate one new construction phase, and to continue monitoring and other restoration-related activities. Potential construction in fiscal year 2013 could include project(s) from the LCA 6 portfolio, Beneficial Use of Dredged Material Program (BUDMAT), and the Demonstration Program. The specific project(s) selected for fiscal year 2013 construction will be based upon funding available, approval of individual reports by the executive branch and execution of the necessary agreements with the State of Louisiana.

In fiscal year 2014 and beyond, we foresee continuation of construction for projects within the LCA 6, BUDMAT, and Demonstration Program with the addition of projects from the LCA 4 and LCA 5 portfolios.

DREDGING NEEDS ON THE MISSISSIPPI

Question. I have heard from a number of very concerned ports, businesses, and citizens about the navigability along the lower Mississippi River due to high water. The Mississippi is the central artery for navigation for nearly the entire Nation. As you know, 40 percent of the entire continent is drained by the Mississippi River Delta. This drainage basin (approximately 1,234,700 square miles) covers about 40 percent of the United States and ranks as the fifth largest in the world. The inland waterways of the United States include more than 25,000 miles (40,000 km) of navigable waters. Much of the commercially important waterways of the United States consist of the Mississippi River system—the Mississippi River and connecting waterways.

Do you have the funds you need to ensure that the Mississippi River remains open for business at the maximum authorized depths?

Answer. The Army is committed to maintaining coastal navigation between the gulf and the ports of the New Orleans and Baton Rouge area. Funds to do so are included in the budget. The dredging needs on this part of the lower Mississippi River are difficult to predict, as they depend on flow conditions, sediment loads, and a variety of other factors, which vary each year as well as over the course of the year. COE continually monitors conditions on the river to ensure the most efficient use of available funds to minimize the need for any depth, speed or night-time restrictions.

Question. How are you balancing this critical need with the needs that other essential waterways are facing across the State of Louisiana and the Nation?

Answer. COE has a large inventory of navigation projects to maintain and seeks to provide levels of service that reliably and safely support freight movements in a way that provides the most overall value to the Nation from the available funds. Navigation projects were categorized as high, moderate, and low commercial navigation use based on tonnage. COE's approach involves a focus on the high and moderate commercial use navigation projects, which together move 99 percent of the Nation's waterborne commercial cargo. Generally, before providing more funding to a project, we consider whether we could achieve a greater return by applying those funds elsewhere. The low-use projects funded in the fiscal year 2012 budget were

selected with the intent to optimize use of the available funding across a range of uses, with emphasis on harbors of refuge, subsistence harbors, projects with Coast Guard Search and Rescue stations, energy delivery projects where marine transportation is the only means to make the deliveries, and commercial navigation projects with less than 1 million tons of commercial cargo.

INLAND WATERWAY TRUST FUND

Question. The Inland Waterways Trust Fund is used to pay one-half of the costs associated with the construction, replacement, rehabilitation, and expansion of Federal inland waterways projects. There are dozens and dozens of critical locks and dams that are in a dramatic state of disrepair—including 1 in New Orleans that has been waiting for replacement for more than 50 years. I am strongly opposed to the administration's proposal of a new funding mechanism, which would replace the existing fuel tax.

However, I am most interested in knowing how COE plans to address the massive backlog of projects on the inland waterway system. Ms. Darcy, how is your agency addressing this critical need?

Answer. Neither the administration nor the inland navigation community is content with current funding levels. In the short-term, the administration has been budgeting for the capital costs of inland waterways projects based on the level of anticipated revenues from the current excise tax on inland waterways diesel fuel.

Question. Do you believe changing the funding mechanism is the best way to address the problem in this economy?

Answer. The administration is open to discussions on revisions to the existing funding mechanism as well as new funding mechanisms.

QUESTIONS SUBMITTED BY SENATOR MITCH MCCONNELL

Question. What funding levels are needed for fiscal year 2012 and fiscal year 2013 in order to maintain the Kentucky Lock project on its critical construction path?

Answer. Two features of the Kentucky Lock and Dam project currently are underway: the superstructure feature (highway/railroad), which we expect to complete in December 2011, and the upstream lock monolith, for which we allocated funding under the American Recovery and Reinvestment Act of 2009. However, the Corps of Engineers (COE) does not plan to move forward with further work on Kentucky Lock and Dam project at this time due to the low level of the receipts to the Inland Waterways Trust Fund, as well as to the relative priority of these projects among the potential inland waterways capital investments. For example, the priorities of the Inland Waterways Users Board, which will be given due consideration in the formulation of future budgets, placed a higher priority for early construction on several other inland waterways projects and deferred completion of Kentucky Lock and Dam, as well as other projects. When the project is ready to resume, COE will develop a proposed schedule, after assessing the critical path toward completion at that time.

Question. The inland waterway system has a number of lock and dam modernization projects whose construction completion dates have been significantly delayed and whose project construction costs have risen far beyond the levels originally authorized by the Congress for those projects. What do you believe the consequences will be of failing to adopt a workable, reasonable long-term capitalization plan to address this situation? Specifically, please speak to the specific long-term impacts to Olmsted Lock and Dam, Kentucky Lock, Wolf Creek Dam, and Greenup Lock and Dam projects without a capitalization plan.

Answer. COE's program today is focused on the operation, maintenance, repair, rehabilitation, and replacement of major flood control and commercial navigation infrastructure systems, and the repair of aquatic ecosystems that COE projects have affected. The overall budget for the program is primarily devoted to maintaining these systems so that they can continue to provide economic, environmental and social benefits to the Nation.

For example, an increasing proportion of our funding in recent years has been devoted to the maintenance and rehabilitation of existing infrastructure, primarily for flood risk management, but also for inland navigation projects. Similarly, the budget for the construction program gives priority to dam safety assurance, seepage control, and static instability control work (about $450–$500 million per year) to repair unsafe dam structures.

The administration will be considering options for a comprehensive recapitalization policy for the Civil Works Program, but still is in the early stages of this effort, which will include an examination of current asset management tools and review

of existing policies and authorities. It is anticipated that new authorities will be needed to ensure that the infrastructure continues to address the water resources priorities of the Nation.

The projects you mention, and their costs, are not affected by the absence of a capitalization plan. The Olmsted Locks and Dam and the Wolf Creek Dam projects have received a priority for funding for many years. Their schedules and costs have changed principally due to a variety of other factors specific to those projects. For the Kentucky Lock and Dam project, we expect to complete the superstructure feature (highway/railroad) in December 2011. We also provided funding under the American Recovery and Reinvestment Act of 2009 for work on the upstream lock monolith. However, COE does not plan to move forward with further work on Kentucky Lock and Dam project or on the Greenup Locks and Dam project at this time due to the low level of the receipts to the Inland Waterways Trust Fund, as well as to the relative priority of these projects among the potential inland waterways capital investments.

Question. Please provide an updated (to fiscal year 2011) "Benefits Foregone" account of the economic cost to our Nation's economy due to lock and dam modernization projects that were not built using an efficient construction schedule (previous COE analysis attached).

Answer. We no longer compile this information. It was inaccurate and misleading, as well as based on an unrealistic premise. However, we would be glad to provide it for any specific project, with appropriate qualifications.

Question. What action is COE taking to be better stewards of taxpayer dollars?

Answer. The budget focuses on the highest-performing projects and programs within the three main water resources missions of COE:

—commercial navigation;

—flood and storm damage reduction; and

—aquatic ecosystem restoration.

For example, the budget includes $51.78 million, more than a $40 million increase, for a comprehensive levee safety initiative to help ensure that Federal levees are safe and to assist non-Federal parties to address safety issues with their levees. The budget also proposes to create savings and efficiencies through elimination of duplicative and lower-priority programs.

Question. What is the estimated level of benefits not recoverable for the Olmsted project?

Answer. The budget continues to place a high priority on the completion of this project. The primary benefits resulting from construction of the Olmsted Locks and Dam project (which also includes demolition of Locks and Dams 52 and 53) are vastly improved navigation transit at a key point on the Ohio River; coupled with significant decreases in current operation and maintenance costs due to the age and advanced deteriorated condition of Locks and Dams 52 and 53.

COE, in its feasibility report, estimated that the construction of Olmsted Locks and Dam would reduce vessel transit costs and net Federal operation, maintenance, and repair costs by around $69 million per year. Operation and maintenance costs at Locks and Dams 52 and 53 continue to increase. A failure event at either of these projects could close a key transit point on the river to navigation, with broad effects on commerce. This ongoing risk will increase until COE completes Olmsted Dam and the new locks are operational.

QUESTIONS SUBMITTED BY SENATOR LISA MURKOWSKI

Question. My understanding is the Pacific Division of the Corps of Engineers (COE) found deficiencies on appeal with the Alaska District's rejection of Conoco's section 404 application to construct a bridge to access the National Petroleum Reserve. As you know, the Native Village of Nuiqsut and really all of the local stakeholders supported the collaborative process that led up to this modified proposal. On remand, is COE looking closely at the record for what the local subsistence community prefers?

Answer. The district considered local support for Conoco's preferred alternative as part of its public interest review in the original decision. All relevant public interest factors were carefully evaluated and balanced. The decision whether to authorize a proposal, and under what conditions, is determined by the outcome of this general balancing process, subject to other legal requirements. The district determined that the district's record of decision did not clearly document their decisionmaking process with respect to the public interest determination. Therefore, while Pacific Ocean division did not remand to Alaska district for the single issue of local support, the remand did instruct the district to clearly document the balancing process.

Further, local support for a project does not obviate the section 404(b)(1) guidelines requirement that only the least environmentally damaging practicable alternative (LEDPA) may be permitted, so long as that alternative does not have other adverse environmental consequences. Based on the information provided to the district, Conoco's proposal was not determined to be the LEDPA.

Question. Prior to the COE's rejection of Conoco's permit on February 5, 2010, the Environmental Protection Agency (EPA) had designated the Colville River Delta "an aquatic resource of national importance."—an aquatic resource of national importance (ARNI). Ms. Darcy, what is your definition of "national importance?"

Answer. The term "ARNI" is used in the process established under an "inter-agency dispute resolution memorandum of agreement" (MOA) developed under section 404(q) of the Clean Water Act. The current 404(q) MOA was signed by the EPA, Department of the Interior (DOI), Department of Commerce (DOC), and my office in 1992. The MOA provides procedures and timeframes for resolving inter-agency disputes regarding permit applications, in an effort to make timely permit decisions. An ARNI is a resource-based threshold used to determine which individual permit cases can be elevated under the 404(q) procedures. Factors used in past elevations to identify an ARNI include diverse high-quality ecosystems, rarity and uniqueness, and economic importance for fish and wildlife species. In other words, the underlying concept is simply that impacts to particularly important aquatic resources should be carefully evaluated.

Question. Has the EPA ever designated an ARNI in consultation with COE or any other agency, or the public? Is there any transparency to the designation?

Answer. The term ARNI is only used on the context of a Clean Water Act (CWA) section 404(q) elevation under the 1992 MOA between EPA, DOI, and DOC, to identify those individual permit cases that may be elevated to my office for review. EPA does not "designate" an aquatic resource as an ARNI. Rather, it concludes that the aquatic resources and proposed impacts are significant enough to request review by my office as provided in the MOA.

Question. If COE disagrees with the EPA's designation of an ARNI, does COE have any means of reversing or modifying the designation?

Answer. The conclusion that the aquatic resources and proposed impacts are significant enough to request review by my office is not an official designation or decision that requires reversal or modification. The term ARNI refers to a criterion used by the resource agencies (EPA, DOC, DOI) to determine if an individual permit may be elevated under the CWA section 404(q) elevation procedures.

A District Commander may not reject a resource agency's substantive conclusion regarding its determination that the aquatic resource impacted by the proposed project is an ARNI and that the impact will result in an unacceptable impact on ARNIs. The 404(q) MOA is intended to allow agencies to elevate certain applications to my office, after following the specified procedures and timeframes described in the MOA.

Once my office receives the request for review of the individual permit application from a headquarters office of the agency (e.g., the EPA Assistant Administrator for Water), the permit decision is held in abeyance.

My office does have the ability and authority to agree or disagree with the designation of an ARNI and with the determination that the project will result in substantial and unacceptable impacts to ARNIs after thorough review of the permit and the decision document, and in many instances after an on-site meeting.

I understand that there are several examples where my office has in fact disagreed with the resource agency designation and/or the determination of substantial and unacceptable adverse effects to ARNIs. If this occurs, my office will inform the headquarters office of the agency that sought headquarters review of the permit application of my decision. The permit is not finalized during a period of 10 days following my decision so that EPA if it desires may initiate a review under its 404(c) authority.

Question. If COE moves forward with granting section 404 clearance to proceed with a fill project even after EPA has designated an area an ARNI, would COE consider it likely that EPA would use its section 404 authority to veto the project?

Answer. Not necessarily. Since 1972, when the Congress enacted section 404, the EPA has only prohibited a proposed action, as provided in section 404(c), about 14 times. The decision to initiate a 404(c) action rests solely with the EPA, and is not tied to the concept of an ARNI.

Question. With CD–5, COE had worked with Conoco, the State of Alaska, and the local community stakeholders since 2004 toward an agreement on accessing CD–5, only to ultimately deny the permit in 2010. How can we in the Congress justify spending on such a process if we ultimately don't have a project?

Answer. CWA requires the chemical, physical, and biological integrity of the Nation's waters be restored and maintained. In accordance with this statutory requirement, the regulatory program decisionmaking process involves an evaluation conducted pursuant to the CWA section 404(b)(1) guidelines and a public interest review. These requirements are intended to ensure that proposed discharges into waters of the United States are not contrary to the public interest and do not result in unacceptable adverse impacts to the aquatic environment. The regulatory process is informed by the applicant as well as information provided by State and Federal regulatory and resources agencies, the local community and other interested stakeholders.

In the case of CD–5, COE worked with Conoco Phillips Alaska Inc. (CPAI), the State of Alaska, and the local community stakeholders since 2004 toward identifying a proposal that could potentially be approved for a permit. During those years, CPAI requested the application review process be suspended on occasion, as they made changes to their proposed project; and so they could continue to work with the local community stakeholders to come to a local agreement about access to the CD–5 area without impacts to subsistence use and local jobs, and to provide mitigation/compensation for social impacts to those communities, to name a few. COE worked diligently with CPAI to find a way to avoid and minimize impacts to jurisdictional waters. In addition, COE made numerous requests for information that would allow them to evaluate portions of the CD–5 project. It is the applicant's responsibility to supply all required and necessary information and to clearly demonstrate that their proposal is the least environmentally damaging practicable alternative. CPAI did not provide the information required to rebut the presumption that another alternative with less environmental impacts on aquatic resources did not exist.

It is the responsibility of the regulatory program to take an unbiased look at each and every project, weigh the detriments and benefits and make a decision based on the law and regulations, public interest factors, and the purpose and need for a project. The decisionmaking process ends in one of several ways:

—permit issuance;
—permit issuance with conditions;
—the applicants' withdrawal of their application; or
—permit denial.

COE works with applicants and the agencies to protect aquatic resources by ensuring that project proposals avoid and minimize unnecessary impacts and mitigate for unavoidable impacts. This process enables the agency to make favorable decisions on 99 percent of the applications received, and works as the Congress intended.

Question. Is it possible to build a bridge, perhaps one of higher elevation or with better placed supports, through an area with an ARNI designation?

Answer. ARNI designation does not prohibit an activity or a discharge in these aquatic resources, including building a bridge through an area identified as an ARNI. COE recognizes that if the resource agencies identify an area as an ARNI, that this term implies that the resource may be high quality, rare, unique, or have economic importance for fish and wildlife species, and that proposed impacts to these important aquatic resources should be carefully evaluated.

Section 404(b)(1) of the CWA requires that only the LEDPA may be permitted, so long as that alternative does not have other adverse environmental consequences. COE denied the permit because it determined based on information provided by the applicant, input from the public and Federal resource agencies that a roadless alternative with horizontal directional drilling (HDD) would be the LEDPA.

QUESTIONS SUBMITTED TO LIEUTENANT GENERAL ROBERT L. VAN ANTWERP

QUESTIONS SUBMITTED BY SENATOR DIANNE FEINSTEIN

HARBOR MAINTENANCE TRUST FUND

Question. It is my understanding that the Harbor Maintenance Trust Fund has a significant surplus. The budget request states the administration will be making a proposal concerning the Harbor Maintenance Trust Fund to the Congress. As I understand it, this proposal will allow other agencies that are conducting port related activities to charge those activities to the Trust Fund.

Could you explain this proposal a little further?

Answer. Several Federal programs support commercial coastal navigation (primarily Corps of Engineers [COE], Coast Guard, Federal Emergency Management Agency [FEMA], Customs, National Oceanic and Atmospheric Administration, and

Department of Transportation), in a variety of ways. The fiscal year 2012 budget proposes to expand the authorized uses of the Harbor Maintenance Trust Fund (Trust Fund) receipts, so that they are available both for harbor maintenance and to finance the Federal share of other Federal activities that support commercial navigation through our ports. Spending would continue to be subject to annual appropriations decisions, just financed from the Trust Fund instead of the General Fund. The proposal would not limit the amount of annual spending for any specific purpose or program, such as harbor maintenance.

Question. How does this proposal improve our Nation's harbors? It sounds like the same things will be accomplished but accounting for the costs will be different. Am I missing something?

Answer. The proposal would support investments that contribute to the strength of the American economy. It would facilitate the development of a comprehensive investment strategy, improve the allocation of resources to and among multiple agencies, and provide transparency on the extent of the Federal support.

Question. Won't this rapidly deplete the Trust Fund balance?

Answer. The proposal is still under development. We expect the Trust Fund to retain a workable balance. We would work with the Congress to decide which other Federal coastal navigation efforts are covered. The extent of the long-term effect on the size of the Trust Fund balance would depend upon which other Federal activities are included.

Question. When the trust fund is depleted by these new activities, how will we maintain the harbors and waterways that are currently funded through the Trust Fund?

Answer. We expect the trust fund to retain a workable balance. However, if it were to be depleted at some future date, the Congress would then decide how to fund the Federal coastal navigation efforts, including those of COE.

Question. Assuming these other activities will continue to be funded from the Trust Fund, will maintenance of these waterways be further restricted due to lack of funding in the Trust Fund?

Answer. That is not our intent or expectation. In fact, there could be more dredging under the proposal. In our view, the overall funding level that the Federal Government provides to COE for maintenance dredging and related purposes should be determined independent of the level of the Harbor Maintenance Tax receipts. More specifically, the allocation of these funds should reflect consideration for the economic and safety return, as well as a comparison with other potential uses of the available funds.

Question. The budget request states a number of times that you are addressing the highest-priority needs. It is also my understanding that the budget proposal does not provide for full authorized widths and depths to be maintained at any harbor maintained by COE. Has there been any calculation of the economic impacts by not fully dredging all of Nation's ports?

Answer. There has been no calculation of the economic impacts of not fully dredging all of the Nation's ports. Maintenance of existing navigation channels to fully authorized dimensions would reduce the cost of some ship movements, but would not necessarily increase the total throughput capacity of the ports. The fiscal year 2012 budget for COE includes $758 million from the Trust Fund to support the maintenance of coastal harbors and their channels and related work. To make the best use of these funds, COE evaluates and establishes priorities using objective criteria. These criteria include transportation cost-savings, risk reduction, and improved reliability—all relative to the cost. Our objective is to provide operational capabilities and efficiencies, with a focus on the most heavily used commercial channels (carrying more than 10 million tons of cargo/year), which together carry about 90 percent of the total commercial cargo traveling through our coastal ports.

Question. It would seem that if the administration goal is to double exports, that fully dredging our ports and waterways would be an essential step in making this goal a reality. Am I missing something?

Answer. Maintenance of existing navigation channels to fully authorized dimensions would reduce the cost of some ship movements, but would not necessarily increase the total throughput capacity of the ports. The fiscal year 2012 budget for COE gives priority to the maintenance of the Nation's large deep-draft harbors. The budget also includes $65 million for the ongoing deepening of the port of New York/New Jersey; $42 million for construction/expansion of dredged material placement facilities at the ports of Norfolk, Virginia; Savannah, Georgia; and Jacksonville and Tampa, Florida in order to continue maintenance of the deep draft channels serving these ports; $600,000 for preconstruction engineering design of Savannah Harbor expansion, Georgia; and $726,000 for a channel improvement study at Brazos Island Harbor (Brownsville), Texas.

DAM SAFETY

Question. Dam safety is of critical importance to our Nation and particularly California. Currently there are three dams in California in the most at-risk category. Could you explain COE's criteria on how projects are ranked related to risk?

Answer. COE uses a dam safety portfolio management process that continually monitors and assesses the condition and risk associated with all COE dams and assigns a Dam Safety Action Classification (DSAC). The priority for funding is focused on addressing the highest-risk dams with the most cost-effective risk reduction alternatives for all DSAC I, II, and III projects. DSAC I dams have been determined to have a confirmed urgent and compelling issue that requires taking immediate and expedited actions to reduce and manage the risk. Therefore, DSAC I dams with life safety consequences are given first priority. For prioritization within DSAC II and III projects, significant weight is given to the quantitative tolerable risk guidelines, but other nonquantitative considerations, including As Low as Reasonably Practical (ALARP), are also used for a more complete basis. The greater the estimated annual probability of failure and the further the estimated life risk is above the tolerable risk limit, then the greater the urgency to act. Further detail on ranking criteria is available in Draft ER1110–2–1156, Chapter 6.3. Draft version of ER 1110–2–1156 has been released as interim guidance to the field. The regulation is available for download at http://www.usace.army.mil/CECW/Documents/cecwe/er1100_21156_1nov10.pdf.

Question. Can you explain what risks these dams and the people below them are facing and what actions are taken to reduce risks while studies are undertaken and corrective plans formulated?

Answer. COE executes its project purposes guided by its commitment and responsibility to public safety. It is after public safety tolerable risk guidelines are met that other purposes and objectives are considered. COE dams are geographically widely spread across the Nation and exhibit varying degrees of deficiency and life-safety risk. Interim Risk Reduction Measure Plans (IRRMP) are the key documents that frame operational decisionmaking for high-risk dams (DSAC I, II, and III). Structural and nonstructural alternatives for the interim risk reduction measures are evaluated for effectiveness to reduce the probability of failure and/or consequences associated with the failure modes. Reservoir pool restrictions, modification of reservoir regulation plan, and updating of Emergency Action Plans (EAPs) are always evaluated as options. The IRRMPs establish the specific threshold events, decision points, and actions required. COE discusses issues consistently and openly with affected stakeholders upstream and downstream of our structures.

Question. These studies seem to take an inordinately long time, particularly for high-risk dams. For instance, Lake Isabella in my home State has been under study for the last 6 years. Isn't there a way to accelerate these studies so the remediation work can get started?

Answer. The risk-informed approach that COE is implementing will allow focus on our most critical deficiencies. This focus will provide a more expedited repair to our worst issues. Given the multiple purposes of most COE dams and the long-term benefits provided, the projects will still require thorough analysis of any modification to assure public safety by modification to the dam. Dam analysis and designs are complex technical efforts. Risk assessments must be performed to understand the extent of a problem and to evaluate options to fix the dams. In many cases, COE dams have multiple deficiencies which increase the complexity of repair.

Question. Your budget proposes $436.7 million for repairs to 10 projects and an additional $37.2 million to continues studies on other dams that have various risk ratings. Repairs on some of these projects are multi-year and, in many cases, extremely expensive—with the repairs often costing more than the original dams. Does COE have additional capability for dam safety work in fiscal year 2012?

Answer. All DSAC I projects that are ready for construction, and some DSAC II projects, are funded at the maximum rate that COE can efficiently and effectively use funds. Decisions on the funding for other dam safety projects (other DSAC II projects and all DSAC III projects) include consideration of budgetary and technical resources as well as other factors.

Question. Your budget proposes $27.6 million for evaluation studies and lists 100 different dams where these studies would be conducted. That works out to about $275,000 per study. That seems very low. Can you explain this better?

Answer. The fiscal year 2012 budget will progress study efforts at 73 projects with levels of effort ranging from $50,000 to $800,000. The prioritization and funding amount is re-evaluated quarterly to adjust to incidents, study progress, successful performance during flood events, and other relevant information.

Question. Is this a list of potential studies that will be undertaken or will all 100 be underway in fiscal year 2012?

Is it also fair to assume that when these projects were formulated prior to authorization and construction, that the 50-year maintenance costs were factored into the benefit cost ratio that led to their authorization and construction?

Answer. An estimate of the 50-year maintenance costs has been factored into the benefit-cost ratios for projects proposed by COE under the 1983 Principles and Guidelines and prior planning guidance.

Question. Further, the budget request proposed $9.5 million to undertake post-evaluation work. However, there is no description of what this post evaluation work is or which projects it would be undertaken on. Can you provide some more information?

Answer. Dam Safety Modification reports for Addicks and Barker Dams (DSAC Is) are scheduled to be approved in fiscal year 2012 and Pre-Construction Engineering & Design (PED) for these dams will be initiated in fiscal year 2012. COE is initiating PED and some limited site preparation construction on Bolivar and East Branch Dams (DSAC IIs) that have approved Dam Safety Modification reports, but that will not be funded for construction until fiscal year 2013.

Question. With the number of dams that are considered high risk and the decline of your budget request over the last 3 years, how are your future budgets going to be able to accommodate these increasing costs?

Answer. The Army manages risks across a broad portfolio of structures, with the objective of reducing the overall portfolio risk. The decision on priorities in project queues is risk informed and performed from a national perspective. Over much a longer period than just the past 3 years, the budget has consistently funded all DSAC I projects and some DSAC II projects at the maximum rate that COE can efficiently and effectively use funds.

There are 10 continuing DSAC I and II dam safety projects funded in the fiscal year 2012 budget for a total of $436.7 million. This funding is allocated within the construction appropriation. As additional high-risk dams are identified we will work to address them as well. We expect to continue funding all DSAC I projects that are ready for construction, and some DSAC II projects, at the maximum rate that COE can efficiently and effectively use funds.

SMALL PORTS

Question. Your budget request cuts funding to many small ports and harbors across the country. Can you tell us a little about the criteria used to determine those cuts?

Answer. Navigation projects were categorized as high, moderate, and low commercial navigation use based on commercial tonnage. Funding is focused on high and moderate navigation projects (coastal projects carrying at least 1 million tons of cargo and inland waterways with at least 1 billion ton-miles of traffic), which move 99 percent of the Nation's waterborne commercial cargo. The low-use projects funded in the fiscal year 2012 budget were selected with the intent to optimize use of the available funds for such projects across a range of uses including critical harbors of refuge, subsistence harbors, projects with Coast Guard Search and Rescue stations, energy-delivery projects such as home heating oil where marine transportation is the only means to make the deliveries and navigation projects with significant, albeit less than 1 million tons of commercial cargo.

Question. Was the criteria that you used for determining your budgetary priorities for fiscal year 2012 contemplated when these projects were originally formulated, authorized and constructed?

Answer. No. The prioritization criteria for the Operation and Maintenance program consider the current use of a project and a variety of other factors, in order to assess how the return on a further investment to the Nation in maintenance compares with other potential uses of those funds.

Question. Was it safe to assume that if the project was economically justified, that the administration would budget for maintenance of the project as appropriate?

Answer. No. However, if the construction of the project was found by the executive branch to be economically justified at that time, the administration generally will consider the project for funding.

Question. Can we, for argument's sake, assume that nearly all the projects that were not budgeted in fiscal year 2012 were economically justified, when construction was completed?

Answer. No. Many projects were authorized without an approved COE report. Others are not being funded due to policy concerns that arose prior to their construction.

Question. This would mean that all of these unbudgeted projects were determined to accrue benefits to the national, as well as, the regional and local economies, am I correct?

Answer. Many, but not all, of the projects would have a COE report that estimates that the project would accrue net benefits. However, key assumptions in these reports may be open to question. For example, benefit estimates for a proposed navigation project generally rely on a speculative projection of future traffic levels.

Question. Was there any analysis to determine if the ports were moving the tonnage projected in the documents that led to authorization and construction of the projects?

Answer. COE has not conducted such an analysis as this would be a large undertaking for an inventory of more than 1,000 navigation projects.

Question. It would seem to me that if a port was meeting its tonnage projections, that it would most likely be meeting the economic projections from the original analysis conducted prior to authorization. Is it safe to assume that some of these small ports would have had small tonnage amounts projected, but yet were still considered economically justified?

Answer. Some of these ports would have been justified based on tonnage projections. However, even where the tonnage is on track with projections, dredging costs have increased dramatically since many projects were authorized. Also, the economic analysis in these reports generally does not account for the effects of funding limitations.

Question. Then how can you not budget for a port that is meeting tonnage projections?

Answer. The fiscal year 2012 budget seeks to allocate the available Federal funds to the activities that will have the highest return on investment to the Nation.

Question. Was there any analysis of the impacts to the national, regional, and local economies of not funding these ports and harbors in your budget?

Answer. No, this would be a large undertaking with an inventory of more than 1,000 projects.

Question. It appears that your criteria being based solely on tonnage would put many ports at a disadvantage to even be considered for funding. How do you justify this criteria?

Answer. While most economists agree tonnage is not a direct measure of the economic benefit, it is a good first-order approximation and there is little agreement on an alternative.

Question. Wouldn't some type of economic analysis be in order to determine the value of these ports to the national, State, and local economies rather than basing your decision solely on tonnage?

Answer. We are working to allocate the funds as best as possible. There is also a cost associated with more analysis. However, COE continues to develop analytical tools to help determine whether additional spending for harbor maintenance and related activities is warranted based on the economic and safety return, as well as a comparison with other potential uses of the available funds.

Question. Wouldn't the economic value of these ports be a better indicator of where maintenance funding should be concentrated?

Answer. We are open to considering other factors. However, in allocating maintenance funds, we are mostly trying to find the best use of an incremental investment above or below the amounts that we are, or are not, already providing.

NEW STARTS

Question. For fiscal year 2011 you proposed two new construction starts for a total of $29 million. These two starts, if they are started, require outyear funding in excess of nearly $2 billion. For fiscal year 2012, you have proposed two more new construction starts that will require outyear funding in excess of $120 million. With the declines in your budget requests that have been recommended in the last 3 years, how do you expect these projects to be funded in future years?

Answer. In the out-years, they would continue to compete for funding, as they did successfully in the development of the fiscal year 2011 and fiscal year 2012 budgets. Also, the $2 billion total for the two fiscal year 2011 new construction starts mostly reflects the cost of authorized work under the Louisiana Coastal Area ecosystem restoration program to address the effects of large and continuing wetland losses on the ecosystem. Each year of delay could complicate the long-term restoration effort.

Question. How were the two "new starts" in the President's budget selected? What criteria were used?

Answer. Raritan to Sandy Hook (Port Monmouth), New Jersey, qualifies as a "Risk to Life" new start. This project addresses a significant risk to human safety and damage to property resulting from increased flood exposure, shoreline erosion, and increased exposure of the shore and inland areas to tidal inundation and wave attack damages. This increased exposure, combined with runoff from coastal creeks, results in increased danger of high flood depths and water velocities with little warning time.

Hamilton City, California qualifies as an ecosystem restoration new start predominantly because it connects four other restored environmental areas, thereby providing a larger continual habitat corridor. This project will also provide ancillary flood risk management benefits to Hamilton City and nearby agricultural lands.

Question. The new study starts that you have proposed are all ecosystem restoration studies. Are there no new flood control or navigation studies that warrant the administration's support?

Answer. While there are many potential flood control and navigation new study starts, the four new study starts proposed for the budget were considered to be a higher priority.

Question. What did the administration hope to demonstrate through selection of these particular projects?

Answer. The four new studies (in addition to those proposed in fiscal year 2011) include:

—Englebright and Daguerre Point Dams (Yuba River) Fish Passage, California;
—Caño Martin Peña, Puerto Rico;
—the Chesapeake Bay Comprehensive Plan; and
—the Louisiana Coastal Area Comprehensive Study.

Three of these studies were proposed as new starts because they will examine ways to contribute to restoration and increased sustainability of ecosystems that were part of last year's interagency collaborative planning initiative. The study of Caño Martin Peña, Puerto Rico will examine ways to provide critical estuarine habitat restoration and move people out of a floodway.

Question. It is my understanding that more than half of the Chief of Engineers reports expected to be submitted to the Congress this year are ecosystem restoration studies. Doesn't this indicate an unbalanced program if the majority of studies being produced are for ecosystem restoration rather than the more traditional COE's missions of flood control and navigation?

Answer. The distribution of Chief's reports among mission areas will vary year to year. The number of reports in any one year is not an appropriate indicator of the makeup of the construction program. Also, the budget funds studies and preconstruction engineering and design work for many proposed flood control and navigation projects.

LEVEE VEGETATION

Question. COE is developing new national policies for the allowance and/or removal of trees and other vegetation from levee projects. Meanwhile, COE has participated in a collaborative effort with the State of California to develop vegetation-removal guidelines for the Central Valley. This collaborative effort holds promise for reaching a reasonable and balanced program for assuring levee integrity and, at the same time, taking into consideration unique circumstances and resources found in many areas in the Central Valley, and COE's past involvement with the region's levees. What is the proposed timing on a revised draft vegetation variance process and when does COE plan to have a final policy?

Answer. COE's goal is to work with resource agencies, such as the National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the Environmental Protection Agency, and levee owners to transition noncompliant levees to COE standards, including vegetation standards. Achieving this goal will allow us to jointly maintain public safety, ensure eligibility under Public Law 84–99 for assistance in making repairs after a flood, and comply with Federal environmental laws.

Noncompliant levee vegetation may affect the safety, structural integrity and function of the levees, could obstruct visibility for inspections, impede access for maintenance, and could block emergency flood fighting operations. Clear vegetation policies, standards, and practices are critical to an effective life-cycle flood risk management program.

The vegetation variance policy referenced in the question was originally issued in 1997 to implement section 202(g) of the Water Resources Development Act of 1996. The policy recognizes that there may be some instances where vegetation may preserve, protect or enhance natural resources and/or protect the rights of Native Americans. This variance process is designed to accommodate those special cases

when it is possible to do so while still maintaining the safety, structural integrity and function of the levees, and allowing access for inspection and flood fighting. In August 2009, COE began revising this vegetation variance request process to reflect current organizational changes and levee safety program principles such as utilizing agency technical reviews, applying a systems approach, and ensuring COE levee safety technical leads are part of the process.

Due to strong interest from sponsors in how changes to this vegetation variance request process may impact them, COE solicited comments on the proposed revisions through the Federal Register, with a notice and comment period from February 9, 2010 to April 26, 2010. COE received more than 500 comments from more than 100 separate organizations and individuals. As a next step, COE is considering whether to post, for the second time, a revised draft vegetation variance request policy for public comment.

Question. Out of the hundreds or thousands of levee failures over the years, how many (and what percent) were caused by vegetation on a levee?

Answer. It is very difficult to determine after the fact whether one factor, such as vegetation, can be attributed to the cause of a levee breach, unless it was observed, documented, and studied during the actual failure. Because direct impacts of vegetation on levees cannot be quantified, potential impacts are based on field observations. COE is aware of instances in which vegetation has been a hindrance to inspections, monitoring, and flood fighting during a flood event. Moreover, vegetation can obstruct the ability to detect indicators for a potential levee breach, such as seepage.

Question. As part of the vegetation variance process, is COE willing to consider regional variances which address vegetation management within the context of unique geographic settings such as exist in California?

Answer. COE recognizes that just as no two regions are the same ecologically, no two levee systems are the same from an engineering perspective. The current draft policies allow for the consideration of the unique engineering and environmental context of particular levee systems to develop vegetation management solutions that address both levee safety and natural resource requirements. The ultimate goal is to work with resource agencies and levee owners to transition noncompliant levees to COE's standards, which may include obtaining vegetation variances or identification of other solutions to fit the specific regional conditions. For example, since 2008, COE and California have been engaged in the California Levee Roundtable, a collaborative partnership of Federal, State, and local organizations that facilitates the consideration of the local environmental and engineering context to develop systemwide levee solutions throughout the region. COE hopes to be able to continue this collaborative process with willing State participants.

Question. Is COE willing to consider regional variances which prioritize vegetation management with respect to all risk factors, without inhibiting or delaying the remediation of higher-priority risk factors?

Answer. COE supports prioritizing how and when levee deficiencies are addressed based on risk. This approach has been integrated into the COE systemwide improvement framework policy. This policy provides an opportunity for local levee authorities to use an interagency approach to identify solutions that optimize resources, and to sequence improvements and corrective actions based on risk. This approach is available to the Central Valley levees through the California Levee Roundtable.

Question. Is COE willing to consider regional variances which provide clear guidance on the level of detail needed for a variance, how that detail will be evaluated, and an appeal procedure should COE and the local sponsor disagree on the outcome of the process?

Answer. The most recent revisions to the draft vegetation variance process are designed as a collaborative approach through which there will be early determination on the most viable approach to meeting COE policies and standards while complying with applicable laws, regulations, and treaties. The intent is that any conflicts or issues should be raised and resolved during the collaborative process as opposed to having a formal appeal process. As such, it is likely that a decision to pursue a vegetation variance could be identified early in the process, diminishing the need for extensive environmental and engineering analysis. For situations in which the levee sponsor would like to pursue a vegetation variance request, more detail has been added to the technical requirements in the draft policy so the levee sponsor can better estimate the cost requirements. Though the review and approval process remains the same, COE believes these steps are necessary to make a well-informed decision about a levee system that is providing economic and safety benefits to the public living behind the levee.

Question. How does COE intend to evaluate, disclose, and address the impacts of this process on the environment and endangered species impacts?

Answer. COE recognizes that in carrying out its responsibility to promote safety and reduce the risk of damage to property through structurally sound levees, the agency must address environmental and natural resource needs through compliance with all applicable laws, regulations, and treaties. COE will comply with all applicable environmental requirements in implementing the policy for requesting a variance from COE vegetation management standards for levees and floodwalls.

COE believes that the best approach is to review the environmental impacts of the application of specific standards as they are applied to site-specific circumstances. With this approach, COE recognizes that each levee is a unique flood risk reduction system that operates within the broader and equally unique local ecosystem. This approach also recognizes that the analysis of potential environmental impacts is dependent upon future, undetermined actions and decisions of the levee sponsors who operate and maintain the levee systems.

When environmental requirements are triggered as COE makes decisions on the inspection standards applied to specific levee systems, the COE will work closely with the levee sponsors, appropriate resource agencies and tribes, as well as other interested parties to complete the required environmental compliance.

Question. Many encroachments that do not comply to new policies, including but not limited to trees, in California's levee systems were either installed, permitted, or required by COE. In other cases the encroachments existed at the time the completed Federal project was turned over to non-Federal sponsors for operation and maintenance. Under COE's new policies (or new implementation of old policies) how will the COE's share responsibility for addressing the construction and environmental costs of compliance?

Answer. "Encroachments" are features such as fences and utility lines requested by the non-Federal sponsor to be added within the levee system project real-estate easement after project completion. Encroachments and vegetation are handled differently under COE policies. COE has a well-defined encroachment permit process. Unpermitted encroachments will be the responsibility of the non-Federal sponsor to correct, including construction costs and environmental compliance. For vegetation, related policies are still under review and not yet final. However, in the final policy COE intends to clearly identify responsibilities of the non-Federal sponsor and COE, including situations when COE will be responsible for addressing the cost of the vegetation (both corrective actions and environmental compliance).

Question. California's Department of Water Resources (DWR) developed a rough cost estimate that compliance with COE's vegetation guidance would cost about $7 billion for 1,600 miles of Federal levees in the Central Valley. If that is correct, would you think that compliance is a good investment?

Answer. The California DWR also has said that given the overall condition of the levees in the Central Valley, higher-risk deficiencies such as underseepage, structural instability, and erosion should be addressed first. In general, COE agrees with this assessment. COE supports DWR's goal to leverage resources by prioritizing levee remediation in order to maximize improving safety. COE is currently working with DWR to incorporate such prioritization as part of the State's long-term strategy for levee improvements that will be outlined in the California Central Valley Flood Protection Plan.

Question. Does COE have its own cost estimates for compliance with its vegetation guidance?

Answer. No, meeting COE vegetation management standards is an operation and maintenance responsibility typically implemented by a local levee sponsor.

Question. Will section 104 credit and section 408 approval be available for projects that do not meet the Levee Vegetation ETL, as long as non-Federal partners are addressing higher-risk factors. How will this be manifested in COE processes?

Answer. COE supports modifications that will improve the levee system and recognizes it may not be possible for a local levee sponsor to address all deficiencies at one time. The determination for credit (now considered under section 2003 of WRDA 2007, not section 104) or section 408 approval for levees that do not meet COE standards for vegetation will be evaluated on a case-by-case basis. Further, the vegetation variance request process and the section 408 approval process can be combined where appropriate.

LEVEE CERTIFICATION

Question. It is my understanding that you have or are planning to implement an engineering circular entitled "USACE Process for the National Flood Insurance Pro-

gram Levee System Evaluation". This EC for the first time establishes a 10-year time limit for levee certification.

Can you tell us how you arrived at this 10-year limit, whether stakeholders were involved in that process?

Answer. Currently there is no FEMA requirement for periodic review of levee certifications. Until FEMA policy is established, it is recommended that, for every certification issued by COE after 10 years, the certification should be reviewed or verified. Flood risk and levee conditions can change over time and it is important to ensure that a levee still meets expected requirements. The 10 years is to serve as a maximum timeframe between certification determinations. A certification can be reviewed any time before the 10 years, if it is of professional opinion there are indications that the project may no longer meet levee certification requirements. Throughout development of this EC, stakeholders were provided opportunities to provide input.

Question. What do you see as the process going forward for those levees whose certification is older than 10 years, and can you give us a sense of how this decertification effort will impact COE's civil works budget?

Answer. It is a local community's responsibility to provide FEMA documentation that a levee meets NFIP criteria for flood mapping purposes. COE does not anticipate any impacts from this effort on the Civil Works budget because we do not budget for levee certification.

CALIFORNIA-SPECIFIC QUESTIONS

Question. The U.S. Geological Survey (USGS) has told my office that there is a high probability that a moderate to severe earthquake could lead to the failure of more than one-half of the levees in the Sacramento Delta. According to the 2009 Delta Risk Management Strategy developed by the California DWR using USGS data: "an earthquake of magnitude 6.7 or greater has a 62 percent probability of occurring in the San Francisco Bay Area between 2003 and 2032. Such an earthquake is capable of causing multiple levee failures in the Delta region which could result in fatalities, extensive property damage and the interruption of water exports from the Delta for an extended period of time."

What actions has COE taken to reduce the risk of major, multiple levee failures in the Sacramento Delta?

Answer. COE is partnering with the State of California and the Bureau of Reclamation (BOR) as described below on the following initiatives related to improving the levee system in the Sacramento-San Joaquin Bay-Delta:

Geographic Information System (GIS) Contingency Mapping and Emergency Response Planning.—A Memorandum of Agreement (MOA) was signed between COE and the California Department of Water Resources (DWR), allowing COE and DWR to initiate phase 1 of GIS Flood Contingency Mapping and Emergency Response Planning for the Delta region. The team met with Delta counties in August 2010 to gather input on concepts for the GIS products, response report, and related data. The second round of meetings were held in November 2010 to present the 35 percent complete product, validate data collected thus far, and gather additional information from county and RD representatives. During July 2011, the PDT met with State and local representatives to review the 65 percent product. The 100 percent product is expected in fall 2011. This will constitute the end of our phase I of GIS Flood Contingency Mapping and Emergency Response Planning for the Delta region. The products will be immediately useful for emergency response planning and will include:

—Standardized GIS database of Emergency Management data;

—Flood Contingency Map Books and large-scale wall maps of the Delta region; and

—An accompanying report documenting the existing framework, existing data, and any potential data gaps.

In May 2011, COE, along with other State, Federal, and local agencies, participated in the California Emergency Management Agency-led 2011 Golden Guardian Exercise. This year included a 3-day Full Scale Exercise based on a major flood in California's Inland Region (Delta).

Delta Islands and Levees Feasibility Study.—The Delta Islands and Levees Feasibility Study (Delta Study) is a cost-shared study to explore potential solutions to address ecosystem restoration needs, flood risk management problems, and related water resources issues in the Delta and Suisun Marsh area. The President's fiscal year 2012 budget includes $1.015 million for this feasibility study. A Feasibility Cost Share Agreement (FCSA) was executed in May 2006 with the California DWR, the non-Federal sponsor. The COE-DWR study team

meets regularly to move the study forward and holds periodic Agency Coordination Meetings with associated Federal, State and local agencies, including BOR.

On August 11, 2011, COE will participate in an interagency meeting to discuss preliminary Sacramento—San Joaquin Delta Modeling. The objective of this modeling is "to develop representative hydrodynamic, sediment transport, water quality, and ecosystem models that enable COE's Sacramento District to, with solid scientific support, understand the system-wide impact of natural and purposeful changes to the Delta and allow it to proactively manage these vital water resources." We expect the basic model to be completed by December 2011. This will be a useful tool to aid project planning and emergency response planning in the Delta.

The feasibility study will culminate in a feasibility report that will make recommendations on possible solutions and next steps.

Interagency Federal Action Plan.—On a broader level, COE supports the Interagency Interim Federal Action Plan for the Bay-Delta (December 2009) and its Update (November 2010). The Action Plan consists of studies, programs, and actions that address essential Bay-Delta issues including helping to ensure integrated flood risk management. The Bay Delta Conservation Plan (BDCP) has been identified as a priority effort by the State and in the Interim Federal Action Plan. COE's Regulatory, Operations, and Planning Programs regularly participate in coordination related to the BDCP. Regulatory and operations have proactively engaged the State, BOR, and others to ensure that they understand Clean Water Act section 404 and section 10 and section 14 of the River and Harbors Act permitting requirements and processes that may be required for the BDCP. COE also participates in interagency (State-Federal) groups focused on advancing science to inform management decisions, including those related to levees, in the Bay-Delta.

Question. How does COE prioritize which levees it repairs?

Answer. In coordination with local and State partners, mainly the California DWR, COE prioritized levee improvements in the 2006 "Report to Congress" based on risk associated with levee failure (protection of life, property, infrastructure, etc.). Ongoing project prioritization is based on how well each project met environmental, economic, and other implementation criteria including availability of a local cost-share partner. The Delta Islands and Levees Feasibility Study will make recommendations to address flood risk management for the Delta as a system.

Question. When prioritizing levee repairs, has COE taken into account which levees are most likely to allow salt water to enter the fresh water supply for 20 million Californians should the delta levees fail?

Answer. System-wide assessments and recommendations, including impact of delta levee failure on the freshwater supply, will be evaluated under the Delta Islands and Levees Feasibility Study. The 2006 "Report to Congress" considered risk to water supply.

Question. Does COE have an estimate of the overall damage, including loss of the fresh water supply, and cost to repair the levees should a serious earthquake strike northern California?

Answer. COE does not have a current estimate of the overall damage, including loss of the fresh water supply, and cost to repair the levees. This will be evaluated under the Delta Islands and Levees Feasibility Study. The California DWR published a report that does provide an estimate. This effort is the State's in-kind cost-share for the Delta Islands and Levees Feasibility Study.

Question. Does COE have an estimate of how much it would cost to reduce the risk of massive levee failure from "high" to "moderate" or "low"?

Answer. No. This will be evaluated under the Delta Islands and Levees Feasibility Study.

Question. The maritime industry in California carries more than 40 percent of the Nation's waterborne international cargo. Recent studies by COE show that there is more than $400 million worth of cargo disrupted for every foot of reduced depth of channel. However, while dredging costs on a per-yard basis have increased 160 percent nationally over the past decade, ports across California and the Nation have not been provided adequate funding to maintain their congressionally authorized dredge depths. Why is it that numerous Federal channels in California are not at their congressionally authorized depth and width?

Answer. Navigation channels rarely have full depth and width available. At present, only 2 of the top 10 navigation projects in COE inventory have full depth and width available. These two projects (both are in the State of California) are, in large part, naturally deep and do not require significant maintenance dredging.

Question. How does the President's budget request for fiscal year 2012 achieve the goals of maintaining the channels in California to their authorized depth and width as well as meeting the President's National Export Initiative?

Answer. The President's fiscal year 2012 budget includes $8.75 million in the operation and maintenance account for the Oakland Harbor, and $8.15 million for the Richmond Harbor; as well as $350,000 in the construction account to continue work associated with the construction of the Oakland Harbor 50 feet deepening. These efforts support commercial use of deep draft navigation projects (1million tons of commercial cargo or more per year) as follows: the Oakland Harbor has 17 million tons of commercial cargo per year and the Richmond Harbor has 25 million tons of cargo per year.

In addition, the President's fiscal year 2012 budget includes $65 million for the ongoing deepening of the port of New York/New Jersey; $42 million for construction/expansion of dredged material placement facilities at the ports of Norfolk, Virginia; Savannah, Georgia; and Jacksonville and Tampa, Florida in order to continue maintenance of the deep draft channels serving these ports; $600,000 for preconstruction engineering design of Savannah Harbor expansion, Georgia; and $726,000 for a channel improvement study at Brazos Island Harbor (Brownsville), Texas. The budget also includes $580 million in the Operation and Maintenance appropriation to maintain our high and moderate commercial use deep draft navigation projects that support 1 million tons of commercial cargo or more per year.

QUESTION SUBMITTED BY SENATOR TIM JOHNSON

Question. The Cheyenne River Sioux Reservation in my State faces acute water needs. For years, the only intake for a land mass the size of Connecticut was in the Cheyenne River. That location had many problems, including the intake coming precariously close to taking in air when the Corps of Engineers (COE) would draw down the Oahe Reservoir. There were also silt problems exacerbated by drawn down and heavy metals in the river. To its credit, COE took the lead in building a new intake in the main stem of the Missouri in deeper water without silt. A number of agencies also contributed to that project. Unfortunately, the reservation still faces an extremely undersized water treatment plant and pipelines. The present day needs on this large reservation are about 8 million gallons a day and future needs are estimated at 12 million gallons a day. Their present water treatment plant and pipelines can only handle 1.2 million gallons a day. As a result, there is a moratorium on the construction of any new homes. This is a reservation where there are often two or three families living under one roof. When they have a fire on the reservation the water system is depleted immediately. In the short term, we must rebuild the core of the system—an untreated water line, a water treatment plant, and a treated water line. This is an important issue for public health, safety, and the economic needs of the reservation. There was an authorization in the last Water Resources Development Act bill of $65 million under the COE's Environmental Infrastructure program, but it has not been funded. Recently, USDA Rural Development awarded a large grant/loan package to the tribe to start this project, but Rural Development doesn't have enough money to complete the entire project. In the same way that we had a multi-agency approach with the intake, I want to ask if you will consider participating on a multi-agency approach in the future. Rural Development has taken the lead but I wish to see COE and other agencies also play a role. Will you do so?

Answer. At my request, the Omaha District Tribal Liaison will contact you to ensure that we remain current on the status of your efforts to address these concerns. However, COE has three main missions:

—flood and storm damage reduction;
—commercial navigation; and
—aquatic ecosystem restoration.

Because environmental infrastructure projects fall outside of these missions, they do not compete well for COE funding given the many other needs across the country that are within the COE's primary mission areas.

QUESTIONS SUBMITTED BY SENATOR MARY L. LANDRIEU

LEVEE CERTIFICATION

Question. There is no question that my State understands the critical need for sound levees that are reliable and provide the best protection possible for our community. In many ways, what we experienced in Katrina and Rita was a preview for

the rest of the Nation of just how vulnerable we are. Approximately 700 counties across the country are home to thousands of miles of levees. Most of these levees were built a generation ago and were designed and engineered at a time when the satellites and GPS were just a dream. After decades of relying on older technology, U.S. Army Corps of Engineers (COE) and Federal Emergency Management Agency (FEMA) have arrived in communities—large and small—with new a standard for levee certification. These communities are very concerned with the significant consequences of having to meet the standards. For some communities it presents a stark choice: find the money to repair and update these levees or drive up the insurance rates to unsustainable levels.

General Van Antwerp, what information and technology is COE using to certify these levees?

Answer. Participation in the National Flood Insurance (NFIP) is a decision of the local community. It is a local community's responsibility to provide FEMA documentation that a levee meets NFIP criteria for flood mapping purposes. There are three cases in which COE may perform a NFIP levee system evaluation:

—If the levee is operated and maintained by COE;

—If it is part of an ongoing COE project; or

—If funding was provided by another Federal agency or by a local sponsor and it has been demonstrated that COE is uniquely equipped to perform the work and that such services are not reasonably and quickly available through ordinary business channels.

For situations in which COE is performing a NFIP levee system evaluation, it will follow procedures in Engineer Circular (EC) 1110–2–6067, "USACE Process for NFIP Levee System Evaluation". The processes in this EC only apply to COE when performing levee evaluations for NFIP purposes. Other entities may still follow the requirements in title 44 of the Code of Federal Regulations, section 65.10 (44 CFR 65.10), Mapping Areas Protected by Levee Systems; however, the EC is consistent with and founded on the principles of 44 CFR 65.10 while updating methods and references to current COE practices and criteria.

Question. Does this take into account the assessments and evaluation made by the local sponsors?

Answer. Yes, all best-available information will be considered during the analysis.

Question. What resources, if any, are available to assist local communities in meeting these standards?

Answer. COE and FEMA work closely together with the local communities to ensure the most accurate and current levee information is available to them and to identify how this information informs the NFIP mapping process.

QUESTIONS SUBMITTED BY SENATOR JACK REED

PANAMA CANAL

Question. As you know, the expansion of the Panama Canal expansion is due to be completed in 2014. Several east coast ports are vying for Federal funding to deepen their channels or make other improvements in order to handle larger Post-Panamax vessels, which require 48 feet of depth and higher air drafts.

What are the economic opportunities that will come from the expansion of the Panama Canal?

Answer. It is difficult to say what overall effect this 2014 lock opening will have on the U.S. economy, or what opportunities it may provide.

Question. Do these opportunities warrant the deepening of all east coast ports that currently serve Panamax vessels so that they can accommodate Post-Panamax ships?

Answer. Probably not, at least not at this time. The ports make the initial business decision to pursue large capital investments necessary to take advantage of the post-Panamax shipping opportunities. The Corps of Engineers (COE) evaluates requests to deepen, widen, or lengthen channels to estimate the costs and benefits to the Nation of the proposal.

Question. How is COE choosing to make its investments in port projects related to the Panama Canal expansion?

Answer. Most of the funding in COE coastal navigation program is not related to the opening of the Panama Canal lock. However, on the Atlantic and gulf coasts, several ports are working with COE on proposals to deepen and widen their channels to accommodate the largest of the post-Panamax vessels, which will be able to reach them more directly after the new locks on the Panama Canal open in 2014. On the Atlantic coast, the United States now has two ports with channels deep

enough to receive these ships when they are fully loaded (Norfolk and Baltimore) and will have a third (New York/New Jersey) by 2014 based on the current COE construction schedule. The United States also has several other ports with depths of 45 feet on the Atlantic and gulf coasts, which these vessels can use when less than fully loaded.

The President's fiscal year 2012 budget includes $65 million for the ongoing deepening of the port of New York/New Jersey; $42 million for construction/expansion of dredged material placement facilities at the ports of Norfolk, Virginia; Savannah, Georgia; and both Jacksonville and Tampa, Florida, in order to continue maintenance of the deep draft channels serving these ports; $600,000 for preconstruction engineering and design of Savannah's harbor expansion, Georgia; and $726,000 for a channel improvement study at Brazos Island Harbor (Brownsville), Texas.

Question. Is there any coordination with the Department of Transportation (DOT), the Department of Commerce, and other Federal agencies in selecting the ports that should be deepened or in making related infrastructure investments (highways, rail, etc.) that support deepening projects?

Answer. Yes. For example, COE is working with the DOT to improve decision-making on Federal investment in coastal navigation infrastructure through better coordination. DOT is providing information on previous years' selected TIGER Grant recipients to COE, which we will be considering as part of the Civil Works budget preparation. Similarly, the DOT has invited COE technical experts to advise it during the upcoming review process for next year's TIGER Grant selections. Our staffs are also working on common metrics for comparing potential investments that support coastal navigation, and for evaluating the performance of those investments.

Question. If it is found that significant new private sector revenue will be generated from the taxpayer investment in port deepening projects related to the Panama Canal's expansion, would it make sense, in these tight fiscal times, to finance these projects through a Federal loan or loan guarantee program (perhaps through an infrastructure bank)?

Answer. There may be advantages to such an approach, as an option in lieu of the traditional cost-sharing. Many ports can borrow or raise funds on their own. A Federal program like an infrastructure bank, in which proposed investments, at ports and elsewhere, compete with each other for support based on their return to the Nation, could be used where needed to catalyze public and private sector investment.

QUESTIONS SUBMITTED TO MICHAEL L. CONNOR

QUESTIONS SUBMITTED BY SENATOR DIANNE FEINSTEIN

INDIAN WATER RIGHTS SETTLEMENT

Question. You have proposed a new account for these Indian Water Rights Settlements. How much mandatory funding accompanies the $51.5 million in discretionary funding you have proposed for fiscal year 2012?

Answer. Title VII of the Claims Resolution Act of 2010 (Public Law 111–291) (CRA) provides $60 million in mandatory funding for each of fiscal years 2012–2014 for the Reclamation Water Settlements Fund, which was established in the Public Land Management Act of 2009 (Public Law 111–11). Mandatory funding for the Navajo-Gallup Water Supply Project in the amount of $60 million described above is included in the Indian Water Rights Settlement Account in the President's fiscal year 2012 budget.

CRA also provided mandatory funding in fiscal year 2011 for four other Indian water settlements. The Bureau of Reclamation (BOR) is in discussions with the tribes in the four new settlements to develop contract and engineering plans for the use of the mandatory funds. Once the contracts have been agreed to and engineering plans have been developed, BOR will be able to develop a construction timetable and thereby develop proposals for the use of the funds.

Question. Where is the funding coming from within your program for the Indian Water Rights Settlements?

Answer. CRA provides $444.9 million in mandatory funding and authorizes $244.4 million in discretionary funding to BOR in the four Indian water rights settlements within CRA. As well, for each of the fiscal years from 2012–2014 CRA also provides $180 million in mandatory funding, or $60 million each year, for the Navajo-Gallup Water Supply Project to accompany the authorization of appropriations of $870 million in title X of Public Law 111–11.

Specifically, for BOR, title III—the White Mountain Apache Tribe Water Rights Quantification appropriates $152.7 million in mandatory funding and authorizes $11 million in discretionary funding; title IV—Crow Tribe Water Rights Settlement appropriates $219.8 million in mandatory funding and authorizes $158.4 million in discretionary funding; title V—Taos Pueblo Indian Water Rights appropriates $16 million in mandatory funding and authorizes $20 million in discretionary funding; and title VI—Aamodt Litigation Settlement appropriates $56.4 million in mandatory funding and authorizes $55 million in discretionary funding.

Question. Do the Water Rights Settlements require specific funding amounts annually?

Answer. There are no specific dollar amounts that are required for each year in the legislation but there are timeframes which are specified for settlement implementation. The amounts requested are based on capability as determined by the scope of the work that is expected to be performed within CRA.

Question. What is the nature of the projects that these funds will be used for? Aren't they rural water systems?

Answer. Each of the four settlements in CRA authorizes the construction of various projects, principally water construction projects. CRA requires BOR to:

—Construct a Rural Water System for the White Mountain Apache Tribe;

—Rehabilitate the Crow Irrigation Project and to construct a Municipal, Rural and Industrial Water System for the Crow Tribe Water Rights Settlement;

—Provide financial assistance in the form of grants on a nonreimbursable basis to eligible non-Pueblo entities for the construction of Mutual Benefit projects, primarily groundwater projects for the Taos Pueblo Indian Water Rights Settlement; and

—Construct a Regional Water System for the Aamodt Litigation Settlement.

Question. How do these projects differ from the seven on-going rural water projects funded in the water and related resources account?

Answer. CRA authorized the Secretary to enter into Settlement Agreements with specific tribes and to undertake the specific actions included in those Settlements. One key difference is that the projects authorized under CRA settle claims against the United States through negotiated settlements. If project and financial timelines are not met, the negotiated settlements may be terminated. Not only are the significant investments of time and funding associated with negotiating the settlements at risk, but underlying these settlements is the quantification of tribal water rights. If the settlements fail, the tribal water rights are not quantified and the communities affected would revert to the prior state of uncertainty with respect to the quantification and the effect of Federal tribal rights on State-based rights. The rural water projects also address water supply needs and provide regional drinking water systems. However, the United States does not face the same legal burden in meeting those future needs as it does with respect to meeting the obligations associated with the settlements authorized under CRA.

Question. Can these new projects proposed for funding in fiscal year 2012 utilize all of the discretionary funding recommended in fiscal year 2012?

Answer. BOR expects to use all of the discretionary funds that are being requested as well as some of the mandatory funding that is made available within the CRA. In fiscal year 2012, BOR is requesting $51.5 million in discretionary funding in the Indian Water Rights Settlement account, of which $24.8 million is directed to the Navajo-Gallup Water Supply Project. The balance of the discretionary request, or $26.7 million, is for the remaining four new settlements.

Question. Why did the seven ongoing projects compete so poorly in the fiscal year 2012 budget compared to these four new projects?

Answer. The seven ongoing rural water projects did not compete for funding with the tribal settlements that are funded within the CRA. These projects have separate authorizations and are at widely varying points in their completion schedules. BOR prioritizes funding for its ongoing (authorized) rural water projects based on established criteria. The first priority for funding rural water projects is the required operation and maintenance (O&M) component. For the construction component, BOR gives priority to projects nearing completion and projects that serve on-reservation needs. For BOR, CRA authorized and appropriated $444.9 million in mandatory funding for five specific tribal water settlements. The Congress also authorized $249.3 million in discretionary funding within the CRA.

CRA settlements require numerous conditions that have to be fulfilled by the Secretary within specified dates in order to satisfy the terms of the agreements. If the conditions are not met, the settlements may fail and the parties to the settlements will likely return to the courts for the resolution of their grievances. The funding BOR requested for CRA projects is required to fulfill the terms of the CRA.

RURAL WATER

Question. Four of these ongoing rural water projects received roughly $500,000 each. Can anything constructive be done with $500,000 for these ongoing projects? What do you anticipate to be accomplished with this small amount of funding?

Answer. Funding amounts for the four rural water projects only reflect Federal funding and does take into account the contributed non-Federal funding. Funds requested by BOR for fiscal year 2012 and the planned use of the funds are shown below:

Fort Peck Reservation/Dry Prairie Rural Water System (Montana).—Funding in fiscal year 2012 will enable the tribes and the non-Federal sponsor, Dry Prairie, to perform a minimal level of administrative business for the project; no design or construction would be performed.

Lewis & Clark Rural Water System (South Dakota, Minnesota, Iowa).—Funding in fiscal year 2012 will enable the project sponsor to perform a minimal level of administrative business for the project; no design or construction would be performed.

Rocky Boys/North Central Montana Rural Water System (Montana).—Funding in fiscal year 2012 will enable the tribe and the non-Federal sponsor, North Central Authority, to perform a minimal level of administrative business for the project; no design or construction would be performed.

Jicarilla Apache Rural Water System (New Mexico).—Funding in fiscal year 2012 continues design and construction of existing water and wastewater facilities.

Non-Federal funding for Fort Peck and Rocky Boy's has not been totally contributed. Non-Federal funding for Lewis & Clark will be fully contributed in fiscal year 2011 and non-Federal funding for Jicarilla has been totally contributed and exceeded.

MNI WICONI

Question. The authorization for Mni Wiconi, one of the rural water projects, sunsets in 2013. Will this project be completed by that date based on the budget request, or will the project require an authorization change?

Answer. It is anticipated that the Mni Wiconi Project will be completed by the sunset date of 2013 if funding is provided at the current budget request level.

NEEDS ASSESSMENT

Question. Has BOR undertaken a needs assessment for the next 25 years?

Answer. BOR has multiple activities within the WaterSMART Basin Studies Program that are in the process of assessing future needs for water in the Western United States. The Basin Studies are 50/50 cost shared activities with non-Federal entities to assess future water supply and demand imbalances including the impacts of climate change. As part of these activities future water demand will reflect changes to water needs from population changes, irrigation, and changes to evapotranspiration from climate change as well as any other stresses on the system. If current or future imbalances between supply and demand are identified, the Basin Studies will develop adaptation and mitigation strategies including structural and non-structural opportunities within the basin.

Through the Basin Studies Program beginning in fiscal year 2012, BOR will offer the opportunity to conduct feasibility studies as authorized by the Omnibus Public Lands Management Act (Public Law 111–11) of 2009 with respect to adaptation and mitigation strategies identified through the Basin Studies or other similar appraisal level studies including the impacts of climate change. Also within the Basin Studies Program, BOR began the West Wide Climate Risk Assessments (WWCRAs) in fiscal year 2010. Beginning in fiscal year 2011, BOR is identifying changes to agricultural demands in a changing climate as part of the WWCRAs. In future years, the WWCRAs will explore other changes to water demands and needs by working with stakeholders within the eight major BOR river basins identified within Public Law 111–11.

With respect to the needs of BOR's infrastructure, although a small number of BOR offices assess and project their individual needs 10 or more years into the future, there has been no comprehensive BOR-wide assessment covering the next 25 years. Most of BOR's assets are not considered "replaceable units of property" and, therefore, do not have well-defined service lives, nor are there good predictive estimates for such future needs. However, in September 2009, BOR updated its Major Rehabilitation and Replacement (MR&R) needs for a defined 5-year timeframe re-

lated to aging infrastructure. These needs have been broadly characterized as potential costs associated with BOR's "aging infrastructure".

BOR also has planning activities underway with its rural communities who are pursuing rural water projects at specific locations throughout the West. These activities are undertaken pursuant to competitive criteria developed under Public Law 109–451.

Finally, in the area of dam safety, BOR maintains an active program to monitor existing dams and initiate corrective actions where appropriate. This program helps ensure the safety and reliability of BOR dams to protect the downstream public and property.

OPERATION AND MAINTENANCE

Question. How do you propose to address BOR's aging infrastructure given the decreasing Operation and Maintenance (O&M) budget?

Answer. To address the requirements of aging infrastructure on projects where BOR is directly responsible for daily O&M, BOR continues to assess the condition of its assets and prioritizes funding to address requirements of greatest importance, given the current budget environment. The prioritization of requirements is based largely on a risk-based approach, evaluating not only the significance of the deficiency involved, but also the potential consequences should the activity not be undertaken.

Through BOR's continued support of a past and current philosophy and emphasis on preventive maintenance and regular condition assessments (field inspections and reviews), many of the service lives on BOR assets and facilities have been extended, thereby delaying the need for significant replacements and rehabilitation efforts (including the related funding needs). Although BOR and its beneficiaries have benefited greatly from this preventive maintenance philosophy, BOR recognizes that as assets and facilities age, they require an increased amount of maintenance. Sometimes this requires more frequent preventive maintenance, and, in other situations, significant extraordinary maintenance, rehabilitation, or replacement may be required.

BOR's fiscal year 2012 proposed budget is $40.8 million for various projects for Replacements, Additions, and Extraordinary Maintenance (RAX) activities across BOR. This compares to the fiscal year 2011 enacted budget of $45.8 million. This request is central to mission objectives for operating and maintaining projects ensuring delivery of water and power benefits. BOR's RAX request is part of its overall Asset Management Strategy that relies on condition assessments, condition/performance metrics, technological research and deployment, and strategic collaboration to continue to improve the management of its assets and deal with its aging infrastructure challenges. This amount represents only the fiscal year 2012 request for discretionary appropriations. Additional RAX items are directly funded by revenues, customers, or other Federal agencies.

AGING INFRASTRUCTURE

Question. Public Law 111–11 provided you with authority to address aging infrastructure. Do you plan to budget for these projects?

Answer. BOR is currently developing its policy to implement the authority provided under Public Law 111–11 to allow extended repayment of extraordinary (nonroutine) and emergency extraordinary maintenance costs on project facilities. Water users are currently required by Federal law to pay these costs, often substantial, in advance.

It is important to note that much of the operation and maintenance (O&M) funding responsibilities for BOR's assets is the responsibility of our project beneficiaries and those operating entities that operate and maintain our transferred works facilities. For some operating entities and project beneficiaries, rehabilitation and replacement funding needs may exceed their available resources and ability to provide the funds in advance. In particular, many smaller irrigation or water conservancy districts are unable to fund these needs in the year incurred absent financing assistance. BOR expects to consider funding such projects in the future based on the policy and funding priorities and water user financial capability, as appropriate.

PRINCIPLES AND GUIDELINES

Question. Please explain how the revised Principles and Guidelines, to be called the Principles and Requirements, will impact BOR's construction and other programs.

Answer. The Principles and Requirements are not yet finalized and it is anticipated that agencies will have some level of flexibility in developing agency-specific

guidance to allow for the achievement of their specific missions and authorities. Two essential differences between the proposed Principles and Requirements and the 1983 Principles and Guidelines will affect BOR's planning and evaluation process.

First, under the 1983 Principles and Guidelines, agencies relied solely on economic benefit-cost analysis to recommend a particular alternative for implementation. When evaluating, comparing, and recommending a specific alternative for implementation under the proposed Principles and Requirements, agencies are to fully consider the social, economic, and environmental effects of proposed alternatives before selecting the one to be recommended for implementation.

Second, the proposed Principles and Requirements may apply to a broader scope of Federal water resource activities than the 1983 Principles and Guidelines. This means that certain BOR programs and activities not previously subject to the 1983 Principles and Guidelines may be subject to the Principles and Requirements.

CLIMATE CHANGE

Question. What is BOR doing to address Climate Change in the West?

Answer. BOR is addressing the stressors of climate change through a comprehensive set of activities, including participating in Landscape Conservation Cooperatives (LCCs) and Climate Science Centers (CSCs), providing West-Wide Climate Risk Assessments, and conducting research and development of climate analysis tools through the WaterSMART Grant and Science and Technology Programs. BOR is also supporting the Department of the Interior's Priority Goal for Climate through these activities to support the LCCs, conduct vulnerability assessments, and implement adaptation actions. LCCs and CSCs are an important part of the framework established by Secretary Salazar in Secretarial Order 3289 to address climate change by bringing science capability to resource managers. BOR is conducting research through the Science and Technology program, which includes collaboration with the Department of the Interior (Department) Climate Science Centers. BOR's Science and Technology program also established the Climate Change and Water Working Group (C–CAWWG) in 2008 to partner with other Federal agencies to address the needs of water managers as they manage the Nation's water and hydropower resources under a changing climate.

Through the Basin Study Program, which includes the Basin Studies, West-Wide Climate Risk Assessments, and the LCCs, BOR is conducting vulnerability assessments to identify the impacts of climate change to water resources in each of the major river basins in the West, as authorized under section 9503 of the SECURE Water Act (subtitle F of title IX of the Omnibus Public Land Management Act of 2009, Public Law 111–11, 42 U.S.C. 10364). In April 2011, BOR submitted its first report under section 9503 of the SECURE Water Act regarding risks to future water supplies from climate change. The report, entitled "SECURE Water Act Section 9503(c)—Reclamation Climate Change and Water 2011", is available at http://www.usbr.gov/climate/ and identifies current uncertainties regarding projections of climate change risks and impacts, while highlighting likely significant impacts associated with the projected rise in temperature, changes to precipitation, reduced April 1 snowpack levels, and changes to both the timing and quantity of streamflow throughout the Western United States. The vulnerability assessments conducted under the Basin Study Program will contribute to the Department's Priority Goal for Climate Change. Additionally, in fiscal year 2011, BOR identified a number of adaptation actions (e.g., WaterSMART Water and Energy Efficiency Grants, Bay Delta Conservation Plan, retrofitting of Hoover Dam to wide-head turbines, and Pilot Run of the Yuma Desalting Plant) being conducted to adapt to stressors within the Western United States, including those from climate change. These adaptation actions will also contribute to the priority goal and span a wide array of BOR's mission responsibilities from water supply planning efforts, retrofitting of hydropower turbines, to the restoration of rivers and ecosystems.

SECURE WATER

Question. What guidance documents exist for implementing the Cooperative Watershed Program and the SECURE Water Act?

Answer. The Cooperative Watershed Management Act, subtitle A of title VI of the Omnibus Public Land Management Act (Act) of 2009 (Public Law 111–11), authorized the Department of the Interior (Department) to provide financial assistance to establish and expand collaborative watershed groups. The act authorizes direct financial support for the operations of a collaborative watershed group, as well as watershed project funding, including restoration projects. The act calls for the Department to establish an application process for the program and prioritization and eligibility criteria for considering applications, in consultation with the States.

In the summer of 2010, the Department received input from the States regarding the program processes and criteria in response to a questionnaire. The fiscal year 2012 President's budget requests $250,000 to implement the CWMP through a funding opportunity. The funding opportunity announcement will describe the proposal selection process and criteria, taking into consideration the early feedback received from the States. BOR expects to post the draft funding opportunity announcement in the Federal Register later this year in order to solicit additional public comments on the proposed selection process and criteria. The funding opportunity announcement will then be revised, as needed, based on comments received and will be posted on www.grants.gov before the end of 2012. The funding opportunity announcement will be the first document describing program processes and procedures. Additional guidance will be developed as program implementation begins.

Section 9503 of the SECURE Water Act (subtitle F of title IX of the Omnibus Public Land Management Act of 2009), authorizes BOR to assess the risks and impacts of climate change to water resources, identify adaptation strategies, and provide financial assistance for feasibility studies. BOR implements section 9503 through complementary activities within the WaterSMART Basin Study Program and Science and Technology program. This comprehensive approach allows BOR to incorporate the best-available science—through coordination with science agencies—into climate change adaptation planning with stakeholders. The Basin Study Program activities include the West-Wide Climate Risk Assessments, the Basin Studies, and the Landscape Conservation Cooperatives. Guidance related to each of these activities is available through program specific links on BOR's Basin Study Program Web site at www.usbr.gov/WaterSMART/basinprogram. A document entitled "Basin Study Program Framework", available at the aforementioned Web site, provides an overview of the Basin Study Program and specifically describes the process for conducting a Basin Study. Additionally, in April 2011, BOR submitted its first report to the Congress under section 9503 of the SECURE Water Act, identifying the risks to future water supplies as well as potential changes in demands and impacts on BOR's mission responsibilities from climate change. The report, entitled "SECURE Water Act Section 9503(c)—Reclamation Climate Change and Water 2011," is available at http://www.usbr.gov/climate/and provides a comprehensive explanation of BOR's activities (including primarily the West-Wide Climate Risk Assessments) that contributed to the report.

BAY-DELTA INTERAGENCY PLAN

Question. Are there remaining interim Federal Bay-Delta Interagency action plan items that are unfunded and if so, how will they be funded?

Answer. Implementation of the four elements of the Interim Federal Action Plan (IFAP) is a multi-year process. Multiple Federal agencies are strategically aligning resources to implement the IFAP. To date, BOR has funded programs and projects to support those elements of the IFAP that are within BOR's purview. Funding in the future is subject to appropriations. Budget requests will be submitted as appropriate and will continue to be a priority for BOR in the future. Potential funding sources include, but may not be limited to Water and Related Resources, California Bay-Delta Restoration, and Central Valley Project Restoration Fund.

TITLE XVI PROGRAM

Question. These projects are critical to providing additional water sources to many western communities, including many communities in California. Is there more that BOR can do to assist in these programs?

Answer. Water reuse projects are a critical aspect of water supply sustainability in the West. By improving efficiency through reuse, title XVI projects provide flexibility during water shortages and help to diversify the water supply. On May 23, 2011, BOR selected eight congressionally authorized projects to receive approximately $11.3 million in fiscal year 2011 title XVI construction funding. In addition, recently BOR invited sponsors of potential new water recycling projects to apply for cost-shared funding to develop new title XVI feasibility studies. On May 9, 2011, after applying program criteria to funding applications submitted by non-Federal sponsors, BOR selected eight entities who will leverage $1.1 million in Federal funding to complete $4.9 million in studies of new water reuse projects.

Question. What is the backlog of unfunded projects?

Answer. For previously authorized title XVI projects, the remaining authorized Federal cost-share totals approximately $595 million once fiscal year 2011 funding has been applied. BOR is currently working to gather information from project sponsors to determine whether any projects have smaller costs than expected, in which case Federal cost-share may require adjustment, and to refine estimates of each

project sponsor's construction plans over the next few years. Once additional communications with sponsors have been completed, BOR will have an updated estimate of the remaining Federal cost-share for authorized projects.

Question. How many separate projects are authorized, and of these does BOR have an opinion on the viability of the individual projects?

Answer. There are currently 53 authorized title XVI projects. We are developing a list of authorized projects that sponsors are not planning to pursue with new or additional construction at this time.

Question. Why don't these projects compete well within the administration budget?

Answer. Water reuse through the title XVI program is a key aspect of the Department's WaterSMART program. The President's fiscal year 2012 budget, which includes $29 million for such projects, points to the crucial role of water reuse in efforts to address water supply sustainability and represents a significant increase over funding levels for the program in recent years.

Question. Has placing these projects under the WaterSMART Program given them more or less visibility within the BOR budget?

Answer. By incorporating the title XVI program into WaterSMART, the Department has been able to articulate the role of water reuse in efforts to stretch the limited water supplies in the West. The fiscal year 2012 budget request builds on lessons learned in other programs such as WaterSMART Grants, including the use of funding opportunities that incorporate prioritization criteria to identify projects that most closely match program goals. Through the use of such funding opportunities, project sponsors have a chance to communicate to BOR the expected benefits of each project—how each project can be expected to contribute to water supply sustainability, benefits to the environment and water quality, and any contributions to increased energy efficiency in the delivery of water, among others.

The Department's coordinated approach to addressing water supply sustainability issues in ways that maximize the benefits of Federal funding extends beyond title XVI and existing WaterSMART Grants. This year as part of WaterSMART, for example, BOR and USDA's Natural Resources Conservation Service (NRCS) worked together on an innovative funding opportunity to leverage funding for water delivery agencies and agricultural producers in California's Central Valley. BOR announced its selection of five Bay-Delta Agricultural Water Conservation and Efficiency Projects for funding, totaling $4.2 million, on May 18, 2011. The selected projects will increase district-level efficiencies through BOR funding and also facilitate water conservation and/or water use efficiency on farms. NRCS will provide up to an additional $5 million in funding and technical assistance to growers in the selected districts for eligible on-farm conservation practices.

Title XVI projects, along with WaterSMART Grant projects, are also included as part of the Department's Priority Goal for Water Conservation, which provides additional visibility.

SOUTH OF DELTA WATER ALLOCATIONS

Question. As you know, I and many others have been closely following the BOR's water allocation for south-of-Delta water users in California's Central Valley. I was pleased to learn of BOR's decision last week to increase the allocation for farmers from 65 percent to 75 percent of their service contract. This followed two previous rounds of increases in recent weeks. However, there remains a great deal of frustration and consternation in California as to why BOR is unable to provide 100 percent of the allocation given the historic level of snow and rainfall we have experienced this year. Do you expect to increase the allocation of water supplies to south-of-Delta users again this year? If so, do you believe that you will ultimately be able to announce a 100 percent allocation?

Answer. On April 8, 2011, BOR increased the allocations for the south-of-Delta agricultural project water users from 65 percent to 75 percent, and on April 25, from 75 percent to 80 percent.

The most probable runoff forecast for this water year shows that we will be in the upper quartile of the historical annual volumes. We are currently analyzing the runoff forecast and are preparing our forecast of CVP operations. Our studies should be completed later this summer and a determination will be made about further increases to the allocation. With the current operational constraints, it may not be possible to achieve 100 percent allocation this contract year. Factors affecting BOR's ability to declare a 100 percent allocation for the south of Delta agricultural water users include the actions required by the biological opinions to avoid jeopardizing listed species and project operations.

BOR has been able to utilize flood flows that have reached Mendota Pool to supplement the water supply to the extent that the flood flows can be forecasted. We have also been able to augment the allocated water supply with water that the districts rescheduled from contract year 2010 and supplemental water exported from the Delta between March 1 and May 8. With these additional water supplies, the total delivery to the south-of-Delta agricultural water users will exceed the volume of an 80 percent allocation.

CENTRAL VALLEY PROJECT RESTORATION FUND

Question. After nearly 20 years what is the status of the Central Valley Project Restoration Fund in addressing the goals of the Central Valley Project Improvement Act?

Answer. The Central Valley Project Improvement Act (CVPIA) Activity Report (CPAR), dated August 25, 2009, and made public in December 2009, provides a detailed report on the status of restoration activities. In general the report identifies a number of activities that have been completed under the CVPIA and remaining activities which are yet to be completed. The fiscal year 2010 "Annual Accomplishment Report to Congress" will provide an update on the status of all CVPIA program activities and will be available to the Congress and the public before the end of 2011.

Question. How much funding has been expended to date for these purposes?

Answer. From fiscal year 1993 through fiscal year 2009 the Program has expended just more than $972 million for program implementation:

—$599.5 million—Restoration funds;
—$290.9 million—Water and related resources;
—$76.2 million—State of California cost share;
—$5.3 million—California Bay Delta Restoration; and
—$29,000—American Recovery and Reinvestment Act.

Question. Do you have an estimate as to when this program would be complete?

Answer. The CVPIA fish and wildlife restoration program is comprised of two broad types of activities: those with endpoints (e.g., structural fish restoration actions and fish screens); and those that are annual ongoing (e.g., instream flow management, gravel replenishment, scientific monitoring and wildlife refuge incremental level 4 water acquisition and conveyance. The annual ongoing activities are expected to occur in perpetuity and thus completion dates do not apply. The activities with endpoints will attain completion however those dates have not been established since their implementation is in some cases beyond the long-range planning timeframe of the next 10 years. Therefore, no date has been set for the reduction in Restoration Fund collections from water and power contractors since the reduction is contingent upon completion of activities with endpoints. See the CVPIA Program Activity Review Report (CPAR, 2009) for more information on program performance measures and completion criteria.

Question. Is there a better way to allocate the collection of fees among the users?

Answer. BOR is required per CVPIA section 3407(c)(2) to collect $50 million per year for the Restoration Fund (indexed to about $76 million in current dollars). Because other CVPIA revenues have not been as high as anticipated, BOR has been required to assess the maximum mitigation assessment required by CVPIA. This assessment is paid by water and power contractors and is capped at $30 million annually (indexed to about $46 million in current dollars).

Although BOR cannot require its water contractors to pay additional annual payments in excess of the CVPIA designated amounts of $6 and $12, respectively, per acre-foot (October 1992 dollars) for agriculture and municipal and industrial water users, respectively, there is no comparable limitation on the amount paid by power contractors. Consequently, when BOR must collect $30 million (October 1992 dollars) in charges, it has no discretion but to collect the balance from its CVP power contractors.

CVPIA did not authorize BOR to collect less than $50 million per year (unless activities are completed) or to collect more from water contractors. Through fiscal year 2009 (based on a 10-year rolling average), power contractors have paid about 32.7 percent of all collections into the Restoration Fund with the balance paid by water users.

Question. Are there other ways to improve fee collections into the fund?

Answer. These financial obligations, issues, and impacts are being examined in detail in an ongoing comprehensive evaluation that BOR is preparing in collaboration with Western Area Power Administration that is addressing the following areas:

—Identification of the activities and projects that have met prerequisites for completing the remaining requirements, and the impact on future water and power contractor collections. (CVPIA allows reducing collections from contractors once activities are complete.)
—An evaluation of BOR's discretion and flexibility regarding financial obligations and funding under the law.
—An evaluation of the CVPIA reimbursability requirements and BOR's discretion related to repayment requirements.
—An assessment of the extent to which CVPIA's financial collection mechanisms have resulted in anticipated Restoration Fund revenues, along with any problematic consequences.
—An assessment of options for assessing and collecting funds for reimbursable activities if and when the costs exceed contractors' credits.

BOR recognizes that the financial viability of the CVP hinges on the availability and marketability of a reliable and competitive source of power plans to complete the above-mentioned evaluation by December 2011. BOR staff has met with representatives of the Northern California Power Association and the Central Valley Project Water Association to ensure their concerns are addressed as part of the evaluation. BOR is committed to working with our stakeholders to address concerns about CVPIA.

CALFED

Question. As you know, the Bay Delta Conservation Plan is a joint effort of Federal and State water agencies, environmental organizations and other water users to plan and implement an environmental permitting process that will restore habitat for Delta fisheries and insure reliable water deliveries to 25 million Californians. The goal of the Bay Delta Conservation Plan is to devise a 50-year plan of water system and ecosystem improvements, and environmental law compliance through adaptive management. It will still likely take 10 to 15 years to complete the projects necessary to increase water deliveries south of the Delta. Until the plan is fully implemented, I fear that farmers will continue to struggle to receive enough water.

Can you please provide me with an update on BOR's efforts to help develop a Programmatic Environmental Impact Statement for the Bay Delta Conservation Plan?

Answer. Federal agencies are fully engaged in developing the Bay Delta Conservation Plan (BDCP). The three lead agencies, Department of the Interior, through BOR and the U.S. Fish and Wildlife Service (FWS) and the Department of Commerce, through the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) together with COE and the U.S. Geological Survey have significantly enhanced Federal engagement on the BDCP. BOR has and will continue to provide expertise throughout the BDCP process to ensure Central Valley Project (CVP) operations and water deliveries are considered, evaluated, and addressed. BOR will evaluate the BDCP in consideration of CVP statutory and contractual obligations. BOR expects to pursue section 7 consultation with NMFS and FWS for CVP operations as part of the BDCP process.

BOR serves as a Federal co-lead agency in preparation of the BDCP Environmental Impact Report/Environmental Impact Statement (EIR/EIS). The BDCP EIR/EIS will include both programmatic and project-specific analyses in compliance with National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) requirements. Preparation of the EIR/EIS has slowed since the beginning of 2011 to allow further formulation and development of the BDCP including identification of the BDCP proposed Project. Federal lead agencies are coordinating with the new State administration and a revised schedule for completion of both the BDCP and the associated EIR/EIS is currently under development. The BDCP EIR/EIS will identify and analyze potential environmental impacts of permitting and implementing the BDCP Proposed Project as well as alternatives to the Proposed Project. Therefore, the EIR/EIS schedule must track with identification of the BDCP Proposed Project.

Question. What are the greatest challenges you (anticipate) in completing the Programmatic Environmental Impact Statement and implementing the Plan?

Answer. Challenges to complete the EIR/EIS for the BDCP include finalizing the identification of a proposed Project for the BDCP; gaining multi-agency support for the effects analysis methodology; gaining agreement on an array of alternatives to be analyzed in the EIR/EIS; determining future governance strategies; determining short-term construction and long-term financing strategies.

Question. Are there small projects, statutory changes or administrative actions that can be taken in the 10- to 15-year interim period before the Plan is fully implemented that will allow for increased water deliveries to south-of-Delta users?

Answer. Actions that could be implemented in the next 10–15 years will be addressed in a near-term plan, which is being discussed as part of the development of the BDCP.

SAN JOAQUIN RIVER RESTORATION

Question. As the author of the San Joaquin River Restoration Settlement Act, I have a keen interest in BOR's implementation of various programs the legislation authorized. I know that the Settlement is also an important priority for BOR, but the administration has never requested the level of new appropriations in the early years needed to ensure full implementation. Full funding benefits all parties:

—the Friant Water Users;

—the third-party landowners; and

—numerous interests seeking full restoration of the river.

When do you expect to release the San Joaquin River Restoration Programmatic Environmental Impact Statement?

Answer. BOR released the Draft Program Environmental Impact Statement/Report (Draft PEIS/R) for the San Joaquin River Restoration Program (Restoration Program) for public review on April 22, 2011. The 60-day public comment period ended on June 21, 2011. The Draft PEIS/R analyzes and discloses the direct, indirect, and cumulative impacts of implementing the Stipulation of Settlement in *NRDC, et al.,* v. *Rodgers, et al.*, (Settlement) consistent with the requirements of NEPA and the State equivalent to NEPA–CEQA. BOR is the NEPA lead agency and the California DWR is the CEQA lead agency for the document. BOR anticipates completing the Final PEIS/R in early fiscal year 2012 and signing a Record of Decision shortly thereafter.

Question. What is your plan to ensure sufficient funding to meet the timeline for completing San Joaquin River restoration projects that are called for in the settlement and the Programmatic EIS?

Answer. We recognize that some actions required by the Settlement are unavoidably behind schedule. This includes certain channel and structural improvement projects that may be beneficial for successful reintroduction of salmon. We are initiating consultation with the parties to the Settlement to develop a new schedule based upon the recently released Draft PEIS/R. This new schedule will assure implementation of the Restoration Program in a manner that addresses the requirements of the Settlement for expeditious action while meeting the requirements of the legislation to minimize impacts on third-party interests. A revised funding schedule will be formulated once a new settlement schedule has been developed. Funding for the Restoration Program will remain a priority as we proceed with the program's implementation. The fiscal year 2012 budget requested $9 million for this program.

Question. The Settlement Act required BOR to establish a "Recovered Water Account" to allow Friant contractors to obtain additional water for storage during wet years. I understand that BOR has recently made a decision regarding the "Recovered Water Account" that may help provide some additional supplies to Central Valley farmers this year. Can you please explain?

Answer. On October 23, 2006, the U.S. Eastern District Court of California approved the Stipulation of Settlement in *NRDC et al.* v. *Kirk Rogers, et al.* Under paragraph 16(b), the Settlement requires BOR to develop a Recovered Water Account to monitor and record reductions in water deliveries occurring as a result of the Settlement and make water available at a total cost of $10 per acre-foot to contractors who experience a reduction in water deliveries as reflected in their Recovered Water Account. Recovered Water Account water is to be made available during wet hydrologic conditions, when water is not otherwise required to meet other obligations of the Secretary of the Interior.

In 2010, the Friant Division long-term contractors did not experience substantial reductions in water deliveries as a result of the Settlement and thus, had relatively low balances in their Recovered Water Accounts. Since early 2011, the San Joaquin Basin has been experiencing wet hydrologic conditions and water is available in Millerton Lake that is not otherwise needed to meet other obligations of the Secretary of the Interior. In response to this condition, in early April, BOR credited an additional 460,000 acre-feet to the Friant Division long-term contractors Recovered Water Accounts. The 460,000 acre-feet of credits were based on a projected average water supply impact for 2012 to 2015. The credits were allocated to Class 1 and Class 2 contractors in proportion to anticipated impacts and contract amounts. With the allocation of 460,000 acre-feet of credits, BOR also made Recovered Water Account water available to each contractor accordingly.

Consistent with the Settlement, the Recovered Water Account water is made available at a total cost of $10 per acre-foot. This relatively low-cost water provides a source of water for groundwater banking and other activities that will assist the Friant Division long-term contractors in avoiding future impacts of the Settlement. With the allocation of 460,000 acre-feet of credits and making this Recovered Water Account water available, BOR has worked to avoid some of the future water supply impacts that may occur with the implementation of the Settlement.

LAKE POWELL/LAKE MEAD

Question. I understand that yesterday, BOR announced that it will release an additional 3.33 million acre-feet of water from Lake Powell to Lake Mead based on significant snowpack in the Upper Basin of the Colorado River. Combined with previous releases totaling 8.23 million acre-feet, that will bring the total to 11.56 million acre-feet this year. Unfortunately though, because of the prolonged drought we have experienced, I suspect we have a long way to go before we refill Lake Mead. Can you tell me about how much water we will now have in Lake Mead and how far does this get us in terms of recovering from the many years of drought?

Answer. Glen Canyon Dam is projected to release approximately 12.46 million acre-feet (MAF) from Lake Powell to Lake Mead, which represents an additional 4.23 MAF of water this water year (October 1–September 30) for Lake Mead. At the end of the water year BOR projects that Lake Mead will have approximately 12.87 MAF of water in storage (approximately 50 percent full). Projected releases from Glen Canyon Dam are updated monthly throughout the year to reflect changing hydrology.

In terms of drought recovery, it is challenging to quantify because it is largely dependent on future hydrology; it is not uncommon to have short periods of high annual runoff from the Rocky Mountains during extended drought periods.

Due to this year's higher inflow, BOR projects the first occurrence of shortage in the lower Colorado River Basin could be in 2015, at a 5-percent probability. At this time last year, BOR had projected an 8-percent chance of shortage as early as 2012.

Question. How much storage capacity remains in Lake Mead?

Answer. Discounting exclusive flood control space (approximately 1.5 MAF), Lake Mead has an available capacity of 25.877 MAF. By December 31, 2011, BOR projects that Lake Mead will have 13.973 MAF of water in storage, which will take up 54 percent of its available storage capacity. At this level the remaining unused storage capacity at Lake Mead will be 11.904 MAF (46 percent of Lake Mead's total available capacity).

IMPERIAL, COACHELLA, AND METROPOLITAN WATER

Question. What do these additional waters mean in terms of deliveries to lower Colorado River users, particularly those in California:

—the Palo Verde Irrigation District;
—Imperial Irrigation District;
—Coachella Valley Water District; and
—the Metropolitan Water District of Southern California.

Answer. The amount of water available to be delivered to water contractors in the Lower Basin, including California contractors, is dependent on the condition determined for the operation of Lake Mead under the 2007 Record of Decision for Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead (Interim Guidelines). The operating condition is determined based on reservoir elevations projected for January 1 of the upcoming year. In 2011, the Secretary has determined that the operating condition is Intentionally Created Surplus (ICS). This determination will not change due to the increased flow into Lake Mead. Current projections for 2012 and 2013 indicate that the most probable operating condition will once again be in the Normal—ICS Surplus range, with up to a 30 percent chance of a Surplus Condition in 2013.

The Secretary has the discretion to declare either a Normal or Surplus Condition when Lake Mead elevations are between 1,075 feet mean sea level (MSL) and 1,145 feet MSL. During a Normal Condition, water contractors are allowed to take delivery of their full entitlement. In an ICS Surplus Condition, water contractors may take delivery of their full entitlement plus delivery of Intentionally Created Surplus water, up to the limits allowed under the Interim Guidelines. If over the next few years the elevation of Lake Mead were to increase above 1,145 feet MSL, this would trigger a Surplus Condition. Those contractors with a surplus entitlement would be allowed to take delivery of their surplus entitlement up to limits established in the Interim Guidelines in addition to a full entitlement.

QUAGGA MUSSEL

Question. In January 2007, quagga mussels were detected in Lakes Mead and Mohave within the Lake Mead National Recreation Area. Since then, Federal, State, and local agencies have been working to prevent the spread of this environmentally and economically damaging non-native aquatic invasive species. Despite their best efforts, quagga mussels continue to impact water users along the Colorado River system—clogging filters, pipes, and pumps. Most traditional methods of control are not compatible with drinking water and environmental regulations. Given that 25 million people down river rely on the Colorado River as a key element of their water supply, resolving, or at least managing the quagga problem may be a priority for BOR. Can you please explain what BOR has done to address the problem and what does it propose to do in the future?

Answer. As a high-priority component of BOR's Science & Technology (S&T) Program since 2008, BOR has focused invasive mussel research activities on improving early detection methods; identifying, developing, demonstrating, and implementing facilities protection technologies and strategies; and assessing ecological impacts. Researchers are engaged in a number of mussel-related activities including monitoring of more than 350 water bodies throughout the Western United States for the presence of mussels, coatings testing to prevent or reduce settlement on critical infrastructure, development of a promising treatment product called Zequanox™ (based on the common bacteria Psuedomonas florescens), and field evaluation of filtration and UV treatment technologies to exclude mussels from raw water systems. The potential of several other technologies is also being explored for removal or settlement prevention on intake structures and within pipelines including elevated pH control strategies; pulsed pressure devices; turbulence generating devices; carbon dioxide injection; dissolved oxygen reduction; potential for the use of certain registered herbicides; retrofit of trashrack raking systems; fish predation; and alternative fish screening technologies. Many of these activities involve collaboration with other Federal and State agencies, BOR's managing partners, and private industry and are expected to evolve as future research needs and new technologies are identified. BOR is also continuing to assess the long-term ecological impacts related to mussel infestations in western water bodies.

BOR has also developed an Equipment Inspection and Cleaning Manual in cooperation with COE. This manual provides recommendations for inspection and cleaning of vehicles and equipment as a prevention tool to limit the spread of mussels and other invasive species carried to new sites by contaminated equipment. Since release of this manual, many other agencies and organizations have adopted its mussel prevention protocols. BOR also hosted the 17th International Conference on Aquatic Invasive Species in San Diego last year to help attract attention of the global scientific community to the importance of these mussels in the western watersheds of the United States.

Question. How much has BOR spent to address the quagga mussel problem?

Answer. It is estimated that BOR will have spent more than $12.5 million through fiscal year 2010 and includes appropriations, power revenues and other funding from customers.

Question. What are those funds being used for?

Answer. Since 2008, BOR funding has supported mussel-related activities including prevention, early detection and rapid response, control and management, research and development, and education and outreach.

Question. How has the quagga mussel impacted water quality and habitat in the Colorado River both above and below Lake Mead?

Answer. Quagga mussels appear to be impacting water quality and habitat in the Colorado River above and below Lake Mead. Water clarity is increasing and, as a result, the production of aquatic weeds is increasing and becoming a problem at pumping plants intakes. The extent to which this change is caused by mussels versus other factors has not been quantified. Quagga mussels are also expected to affect nutrient dynamics and therefore have a detrimental impact on fisheries. BOR is continuing to assess the long-term ecological impacts related to mussel infestations including changes in water quality, interactions with other benthic organisms, and the potential for cyanobacteria-producing toxins in western water bodies.

Question. What else could we do to address the problem, to protect habitat and wildlife, and to preserve water and irrigation district infrastructure?

Answer. BOR continues to address evolving issues through monitoring, research, outreach, and education activities. Further knowledge is continually being gained through research that improves our understanding of mussel-related ecological and infrastructure impacts in the West and supports our strategies to mitigate impacts to water and hydropower facilities. Prevention of mussel movement to new water

bodies is a very important activity, but it falls primarily to agencies that manage recreation at lakes and reservoirs and have authority to control the movement of watercraft and invasive species.

As a high-priority component of BOR's S&T program since 2008, BOR has focused invasive mussel research activities on improving early detection methods; identifying, developing, demonstrating, and implementing facilities protection technologies and strategies; and assessing ecological impacts. Researchers are engaged in a number of mussel-related activities including monitoring of more than 350 water bodies throughout the Western United States for the presence of mussels, coatings testing to prevent or reduce settlement on critical infrastructure, development of a promising treatment product called Zequanox™ (based on the common bacteria Psuedomonas florescens), and field evaluation of filtration and UV treatment technologies to exclude mussels from raw water systems. The potential of several other technologies is also being explored for removal or settlement prevention on intake structures and within pipelines including elevated pH control strategies; pulsed pressure devices; turbulence generating devices; carbon dioxide injection; dissolved oxygen reduction; potential for the use of certain registered herbicides; retrofit of trashrack raking systems; fish predation; and alternative fish screening technologies. Many of these activities involve collaboration with other Federal and State agencies, BOR's managing partners, and private industry and are expected to evolve as future research needs and new technologies are identified. BOR is also continuing to assess the long-term ecological impacts related to mussel infestations in western water bodies.

BOR has also developed an Equipment Inspection and Cleaning Manual in cooperation with COE. This manual provides recommendations for inspection and cleaning of vehicles and equipment as a prevention tool to limit the spread of mussels and other invasive species carried to new sites by contaminated equipment. Since release of this manual, many other agencies and organizations have adopted its mussel prevention protocols. BOR also hosted the 17th International Conference on Aquatic Invasive Species in San Diego last year to help attract attention of the global scientific community to the importance of these mussels in the western watersheds of the United States.

QUESTION SUBMITTED BY SENATOR PATTY MURRAY

ODESSA SUBAREA SPECIAL STUDY

Question. Commissioner Connor, as you know I have worked closely with the Bureau of Reclamation (BOR) over several years on the Odessa Subarea Special Study to look at surface options for irrigation to reduce the impact to the aquifer. Clearly, agriculture is vital to Washington State's economy and the Central Washington area is a huge part of the industry. We are so close to finishing the Study to determine the best path forward, but I am hearing that the BOR doesn't plan to fund the remainder. Can you please tell me your plan to ensure the completion of the study?

Answer. BOR recognizes the importance and understands the significance of the Columbia Basin water issues, and specifically the Odessa Subarea Special Study (Study). In this regard, BOR has partnered with the State of Washington (State) to investigate the possibility of continued development of the Columbia Basin Project to deliver project surface water to replace the current ground water use in the Odessa Subarea. The Study is near completion; however, faced with considerable competing demands for aging infrastructure, satisfying Endangered Species Act regulatory requirements on operating projects, and other high-priority water issues throughout the 17 Western States, it was not possible for BOR to provide funding for the study in the fiscal year 2012 President's budget. BOR will continue to work with the State to bring the Study to completion as soon as possible. BOR and State of Washington Department of Ecology have jointly prepared a draft environmental impact statement (EIS) to meet the National Environmental Policy Act and State Environmental Policy Act requirements. The draft EIS was released to the public from October 26, 2010 through January 31, 2011, with more than 210 comment letters received. The final EIS is anticipated to be completed by late 2011.

QUESTIONS SUBMITTED BY SENATOR TIM JOHNSON

RURAL WATER

Question. Given increases in prices over time and the necessary noncontract and overhead costs associated with construction projects, it follows that the longer a

project takes to complete, the more expensive it will be. Has the extension of the completion of Bureau of Reclamation's (BOR) Rural Water Supply Projects increased overhead costs at the expense of construction?

Answer. Yes. As annual appropriations are less than what is necessary to support full project construction, we believe some Rural Water Supply Projects are incurring increased overhead costs at the expense of construction.

Question. If so, by how much?

Answer. BOR does not have any way of quantifying such an increase and does not have specific data to determine the actual extent to which increased overhead may impact the total cost of completing projects.

Question. How does BOR propose to restore the funds which had to be used to cover overhead costs so that construction can be completed?

Answer. Historically, cost indexing authorized for each of the current rural water projects has kept pace with inflation, and coupled with a favorable construction climate, projects appear to be progressing within original cost estimates. The funds requested by BOR for rural water construction are formulated to account for projected construction capabilities and other mission critical work.

SUBCOMMITTEE RECESS

Senator FEINSTEIN. So thank you for taking it all with good humor. Thank you very much.

And the hearing is recessed.

[Whereupon, at 4:12 p.m., Wednesday, April 13, the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2012

WEDNESDAY, MAY 4, 2011

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

The subcommittee met at 2:21 p.m., in room SD–192, Dirksen Senate Office Building, Hon. Dianne Feinstein (chairman) presiding.

Present: Senators Feinstein and Alexander.

DEPARTMENT OF ENERGY

NATIONAL NUCLEAR SECURITY ADMINISTRATION

STATEMENT OF HON. THOMAS P. D'AGOSTINO, UNDER SECRETARY FOR NUCLEAR SECURITY AND ADMINISTRATION

ACCOMPANIED BY:

ANNE HARRINGTON, DEPUTY ADMINISTRATOR FOR DEFENSE NUCLEAR NONPROLIFERATION

ADMIRAL KIRKLAND DONALD, DEPUTY ADMINISTRATOR FOR NAVAL REACTORS

DR. DONALD COOK, DEPUTY ADMINISTRATOR FOR DEFENSE PROGRAMS

OPENING STATEMENT OF SENATOR DIANNE FEINSTEIN

Senator FEINSTEIN. Good afternoon, ladies and gentlemen, and welcome to the Energy and Water Development Subcommittee's oversight hearing on the National Nuclear Security Administration's (NNSA) fiscal year 2012 budget request.

NNSA has requested $11.8 billion for fiscal year 2012. It is an increase of $1.1 billion, or 10.2 percent, more than the fiscal year 2011 level. I think in a sense, they are an endangered species because they are probably the only one, Senator Alexander, that is going to get this kind of a raise. I noted all of the smiles on their faces when they came into the room. This is, in fact, the largest increase to NNSA since it was established 11 years ago.

This increase also follows another record-breaking increase of $813 million, or 8.2 percent, in fiscal year 2011. Based on the 2012 budget request, NNSA's budget would grow by about $2 billion over 2 years.

The budget increase presents a number of opportunities including:

VerDate Nov 24 2008 17:29 Dec 28, 2012 Jkt 064597 PO 00494 Frm 00097 Fmt 6601 Sfmt 6601 U:\2012HEAR\10HEAR\10MY04NNSA.TXT 64597

—accelerating efforts to secure all vulnerable nuclear materials by the end of fiscal year 2013 to reduce the threat of nuclear terrorism;
—extending the life of nuclear weapons currently in the stockpile;
—replacing or upgrading aging infrastructure needed to ensure the safety, security, or reliability of nuclear weapons; and
—designing nuclear reactors that will operate for 40 years without refueling for Ohio Class ballistic missile submarines.

Now, with these opportunities also come some challenges. Regarding nonproliferation, the goal announced in April 2009 to secure all vulnerable nuclear materials in 4 years has accelerated nuclear security efforts.

I would like to highlight a few recent achievements over the last 2 years. NNSA has removed 960 kilograms of highly enriched uranium, enough nuclear material for 38 nuclear weapons. NNSA has removed all highly enriched uranium from six countries. One of these countries was Libya. Given the recent unrest in Libya, the presence of this dangerous nuclear material in an unstable part of the world would have increased the risk of nuclear terrorism. Removing highly enriched uranium from six countries in 2 years is much faster than one country a year that NNSA has averaged in the last 13 years. NNSA has also completed security upgrades at 32 buildings in Russia containing weapons usable materials.

Now, despite this progress, stockpiles of nuclear weapon materials around the world are still vulnerable to theft. In particular, all of the publicly known cases of theft of weapons usable nuclear material were perpetrated by insiders. Corruption and insider threats are endemic in many parts of the world, including Russia. That places unsecured weapons usable nuclear weapons in great jeopardy.

I would like to discuss how NNSA has addressed this threat for a moment. Regarding nuclear weapons activities, I am concerned about your ability to develop reliable costs and schedule estimates for complex nuclear infrastructure projects. You plan to build three new facilities that will each exceed $3 billion in costs, and in some cases may exceed $6 billion—the Chemistry and Metallurgy Research Facility at Los Alamos, the uranium processing facility at Y–12, and the pit disassembly and conversion facility at Savannah River. NNSA plans to spend $682 million on these three projects alone in fiscal year 2012, and will reach a peak of $1.1 billion by fiscal year 2014. New cost estimates for these facilities are three times more than the original estimates. So, we need to discuss this.

NNSA has a long history of underestimating budget needs and increasing cost projections because of design schedule, design changes, and schedule delays. If the costs for these facilities increase further, I am concerned that it could harm higher-priority missions, such as life-extension programs and increased weapon surveillance. NNSA must demonstrate to the Congress that it can effectively manage these complex projects and complete them on time and on budget.

Modernizing our infrastructure on time and on budget, however, is not enough. NNSA must clearly demonstrate how this new infrastructure will not only enhance the safety, security, and reliability

of our nuclear weapons, but also help reduce the size of the stockpile.

The new START Treaty was a step in the right direction by reducing the size of our actively deployed nuclear weapons to 1,550. However, we still maintain 5,100 nuclear weapons. A major justification for investing in new infrastructure is to reduce the hedge; that is, the weapons we hold in reserve in case an unforeseen problem occurs with their reliability and performance.

NNSA must do a better job explaining how these multi-billion dollar facilities and major investments in experimental facilities, such as the National Ignition Facility, will help us draw down the stockpile further.

As you know, Mr. D'Agostino, this is important to me. You are asking for a lot of money, so the performance has to be there to back up this additional money in reduction of nuclear weapons.

Joining us today to explore these important national security issues is Thomas P. D'Agostino, the Administrator of the National Nuclear Security Administration. Senator Alexander, I want you to know I have the highest respect for him. We had substantial classified briefings on the prior effort on the Reliable replacement Warhead program and, before that, on the proposal for increased nuclear weapons, plutonium pits, advanced weapons concepts, and on and on. He has always been an absolute straight shooter, and I really, really prize that. So, I know what you say is the truth, and I very much appreciate that.

Joining Mr. D'Agostino is Dr. Donald Cook, the Deputy Administrator for Weapons Activities; Anne Harrington, the Deputy Administrator for Nuclear Nonproliferation; and Admiral Kirkland Donald, Deputy Administrator for Naval Reactors. So, thank you all for taking time to be here today, and let me turn to Senator Alexander for his comments.

STATEMENT OF SENATOR LAMAR ALEXANDER

Senator ALEXANDER. Thank you, Senator Feinstein. As always, it is good to work with you and to see you. And thank you for our very accomplished witnesses for being here. I look forward to your testimony.

I have three or four points I would like to make.

Number one, if Senator Inouye and Senator Cochran were here, I would say—and if they come I will say—that most of NNSA's responsibility are in support of the U.S. military, and this appropriation ought to be treated in part like Defense spending. And that will become increasingly important as we make budgets over the next several years because when we have a Government that is collecting $2.2 trillion and spending $3.7 trillion, we have a lot of tough decisions to make. And we have, as the Senator said—the Chair said—we have a significant increase in a—in nuclear modernization, for example. We agreed on that. The President agreed with that in connection with the vote of the new START Treaty, which I supported. I think it was a wise treaty. But at the same time, we do not want our nuclear weapons to begin to resemble a collection of wet matches, and they will not, given the plan that is laid out here.

So, that is my first point, Madam Chairman, that I think as we talk with Senators Inouye and Cochran, that when allocations are made, that this spending should be defense spending and not be competing with National Labs, other environmental clean-up, et cetera.

Number two, I would like to follow up on Senator Feinstein's point about management of projects. Probably the area where we in the Senate have not done as well as we should have is in the area of oversight. That really is a true function of the Congress, especially of the appropriations subcommittees. I mean, it is our job really to understand issues. We work hard on that, but we get pulled in many different ways and do not have a chance to do that as much as we should.

And that should be particularly true with the Department of Energy (DOE) and with this part of DOE because it is just full of multi-billion dollar projects. I just left a meeting with Secretary Chu. We were talking about environmental management projects, which are a different part of DOE. But there, he has got massive projects, and when we are spending too much, there are difficult decisions. We have got to clean up radiation. We have got to clean up mercury. But if we can save $1 billion here or $1 billion there, that money can go to National Laboratories. It can go to research for energy. It can go to environmental clean-up. It can go to a whole variety of areas.

So, I hope that I can support the chairman and that we can vigorously assist you in taking a fresh look at project management as we go through this period of reduced spending. In fact, we are going to have to if we are going to have the money to do what we need to do.

Third, I have a list of about $20 billion of your major NNSA projects. And it would be nice to talk about ways to figure out what is it really going to cost, and then can it stay that way? I remember while I was running for Governor, a group in Knoxville wanted a road built. And I asked the chairman of the Chamber of Commerce, well, how do you propose I do that if I am elected? He said, well, I would get the best possible person to run it, to agree on a plan and meet with him once a month, and see if you are following the plan. Well, I was elected. I got that person to come be the transportation commissioner. We met once a month. The road got built. So, maybe we need to make sure that we get designs that we agree with, cost amounts that we agree on, and have monthly report sessions to make sure that we are on schedule or not on schedule. Maybe we can be of assistance in that way.

Fourth, that leads me to some questions I will be asking during my question time about whether it is a good idea, Mr. D'Agostino, to spend time consolidating a contract at Oak Ridge and Pantex, or Y–12 and Pantex, whether you could really save more money and more of your management energy doing that and causing the contractor to work on that, or whether you would be better off working on all these big projects I was just talking about. So, we will get into that.

Finally, I am delighted to see—delighted to talk a little bit about naval reactors. It has always puzzled me, Senator Feinstein, about why we seem to do so well with the naval reactors and we cannot

build a nuclear power plant in the United States. In fact, one of my proposals, and I was only partly in jest, that the way to have clean electricity in the United States, the largest amount of it, is just to build seven nuclear-powered destroyers and plug them in around the country where the population centers are, and have, you know, add 15,000 or 20,000 megawatts of clean electricity. We could probably get that done in a short period of time. We are able to—I mean, both have been safe. We have never had a fatality either in connection with a naval reactor or with a civilian reactor. But I think we have a lot to learn from naval reactors that we might transfer to our civilian reactor program. So, I will look forward, Admiral, to talking about that and what you think we might learn from that as well as supporting your efforts.

So, Madam Chair, this is—and ought to be—a fascinating hearing. I look forward to the testimony and thank you for your time.

Senator FEINSTEIN. Thank you very much, Senator, and I look forward to working with you. We did so on Interior, and we will do so on this subcommittee as well.

Let me turn to you now, Mr. D'Agostino. Will you be making the comments for everybody at the table?

Mr. D'AGOSTINO. Yes, Madam Chairman.

Senator FEINSTEIN. Okay. Please proceed.

SUMMARY STATEMENT OF THOMAS P. D'AGOSTINO

Mr. D'AGOSTINO. Thank you. Madam Chairwoman, Ranking Member Alexander, thank you for the opportunity to address this subcommittee today. But more importantly, thank you for your continued support of the NNSA and the 35,000 men and women working across our enterprise to keep our country safe, protect our allies, and enhance global security. We could not do this work without strong bipartisan support and engaged leadership from the Congress.

As I come before you today, the capability NNSA offers to the Nation, and indeed the world, are on display in real time. Just last week, I had the opportunity to travel to Nevada to visit the Remote Sensing Laboratory. For 7 weeks, the talented and dedicated men and women at the Remote Sensing Laboratory had been working with their colleagues from across the enterprise to support the response to the devastating earthquake and tsunami that struck Japan on March 11, 2011. They had been providing critical information to our interagency colleagues and to our partners in Japan. Of course, our thoughts and prayers are with the Japanese people during this very difficult time, but I was honored to have the opportunity to thank our men and women personally and directly last week for their outstanding work.

Our ability to respond to this crisis is the latest example of the vital and diverse role we play in implementing the President's nuclear security agenda and of the need to invest in the future of our enterprise. This budget request seeks the funds required to make these investments.

As I see it, the budget request can be broken down into three key themes. First, we're investing in the future. President Obama has requested $7.6 billion for our weapons activities account to support our effort to leverage the best science and technology in the world

to maintain our nuclear deterrent. This will enable us to enhance our surveillance of the stockpile, continue to design modern facilities that we need to maintain our Nation's expertise in uranium and plutonium processing and research, and proceed with key life extension programs for our weapon systems.

A critical part of that is the life extension program for the W78 warhead. Consistent with the policies in the President's Nuclear Posture Review, we have submitted a request to this subcommittee and the House Energy and Water Development Subcommittee to begin studying the requirements for the W78 life extension, including the option for interoperability of the nuclear explosive package with the Navy's W88 warhead. I strongly encourage this subcommittee to approve this request.

Investing in a modern enterprise is critical to our stewardship program, but it also supports the full range of NNSA's nuclear security missions, which brings me to the second key theme that this budget request shows, and that is implementing the President's nuclear security agenda. As President Obama has said in his speech in Prague in April 2009, the threat of a terrorist acquiring and using a nuclear weapon is the most immediate and extreme threat we face. Preventing the spread of nuclear weapons and keeping dangerous materials out of the hands of terrorists is a vital national security priority.

To address that threat, we are requesting $2.5 billion in 2012 and more than $14.2 billion over the next 5 years for our nuclear nonproliferation programs. This will provide the resources required to meet the commitment secured during the 2010 Nuclear Security Summit.

To power the nuclear Navy, President Obama has requested $1.1 billion for NNSA's naval reactors program. This will allow us to continue the design work on the propulsion unit for the Ohio Class Replacement Submarine in order to meet the Navy's required procurement date of 2019. It includes critical investments in a modern and sustainable spent fuel, spent nuclear fuel infrastructure at the naval reactor site in Idaho National Laboratory. And finally it seeks the resources to refuel the land based prototype in upstate New York.

Madam Chairwoman, I realize that this subcommittee has many competing requirements and that this request comes at a time of acute financial stress for our entire country. But I believe nothing is more important than ensuring our Nation's security. It is my responsibility to assure you that we can manage these increases wisely.

That brings me to the third key theme outlined in this budget request, and that is our commitment to improve the way we do business and manage our resources.

For us, improving our project management is part of the implementing, achieving our mission, and implementing the President's nuclear security agenda. To better ensure that we bring these major projects to completion on time and on budget, we will ensure that we have qualified project managers leading our major projects. We will set costs and schedule baselines on construction projects when design work is 90 percent complete, and we will subject these estimates to rigorous independent reviews.

We are partnering with our Management and Operations (M&O) partners to streamline our governance model to devote more resources to critical mission work while maximizing safety and security at our sites. We are making sure that we have the right contracting strategy in place. We are continuing to find innovative ways to save money across the enterprise. For example, since 2007, our Supply Chain Management Center has used new technologies and pool purchasing power to drive efficiencies across our sites. The result has been more than $213 million in auditable cost savings.

PREPARED STATEMENT

All of this is part of our effort to create one NNSA, a true partnership between all of our programs and all of our partners to fulfill a common mission. Taken together, these steps will ensure that we have a modern, 21st century nuclear security enterprise that is safer, more secure, more efficient, and organized to succeed. That is the vision outlined in this budget request. It supports the full range of NNSA missions, and, more importantly, it represents a critical investment in the infrastructure, the people, the science, technology, and engineering required to fulfill our missions. I look forward to working with the members of this subcommittee to help make that vision a reality.

With that, we would be happy to take any questions you may have.

[The statement follows:]

PREPARED STATEMENT OF THOMAS P. D'AGOSTINO

Thank you for the opportunity to present the fiscal year 2012 President's budget request for the National Nuclear Security Administration (NNSA). This budget request will allow the NNSA to meet its commitments to the American people and our international partners to provide for nuclear deterrence, to reduce nuclear dangers around the world, and to provide the capabilities to address the broader national security challenges of the 21st century.

The vision of NNSA is to make the world a safer place. NNSA's mission is to enhance global security through nuclear deterrence, nonproliferation, counterterrorism, naval nuclear propulsion, and to support national leadership in science and technology.

Recognizing the economic challenges facing our Nation and the budget pressures being felt throughout the Federal Government, the President demonstrates through this fiscal year 2012 budget request his strong commitment to the nuclear security of our country and our allies by proposing an unprecedented investment in NNSA's mission. This investment is a commitment to recapitalize the nuclear security enterprise and do it in a way that makes sense.

The fiscal year 2012 President's budget request provides $11.78 billion to invest in a modern, 21st century nuclear security enterprise, implement the President's nuclear security agenda, and improve the way the NNSA does business and manages its resources.

The fiscal year 2012 request represents an increase of 5.1 percent more than the $11.2 billion requested for fiscal year 2011, reflecting a commitment to investing in a modern enterprise that can support the full range of nuclear security missions. The request highlights the vital role NNSA plays in implementing the President's nuclear security agenda and the broad, bipartisan consensus that has developed over the last 2 years regarding the role NNSA plays in enhancing our Nation's security and the resources needed to get the job done.

INVESTING IN THE FUTURE

Secretary of Energy Chu and I work closely with Secretary of Defense Gates and other Defense Department (DOD) officials to ensure that NNSA remains focused on a strong interagency partnership that meets our national security requirements and

promotes NNSA's sustainability. As a result, the President's request includes $7.6 billion for the weapons activities appropriation, an 8.9 percent increase more than the President's fiscal year 2011 request and a 19.5 percent increase over the fiscal year 2010 appropriation to invest in the future of the nuclear security enterprise. These resources will support, among other things, the operation and construction of the modern research facilities needed to do cutting-edge science and attract the next generation of nuclear security experts. It continues implementation of the President's commitment to invest $85 billion over the next decade to sustain the nuclear deterrent and to modernize the infrastructure that supports it, as well as to implement the agenda outlined in the Nuclear Posture Review, the Stockpile Stewardship and Management Plan and the updated section 1251 report submitted to the Congress.

NNSA's budget request also includes associated out-year projections in the Future-Years Nuclear Security Program (FYNSP) that identifies resources needed to meet the continuing requirements for significant long-term investments in the deliverables, capabilities and infrastructure of the enterprise.

These resources will help us invest in a modern, 21st century Nuclear Security Enterprise that can sustain the stockpile and support our full range of nuclear security missions. With these investments, NNSA will be able to continue to move toward an enterprise that is safer, smaller, more secure, more efficient, more sustainable, and more adaptable.

The request includes an increase of 3.1 percent more than the fiscal year 2011 level to protect and advance the scientific capabilities at the U.S. national security laboratories and a 21 percent increase for infrastructure improvements, including continuing work on the Uranium Processing Facility at the Y–12 National Security Complex and the Chemistry and Metallurgy Research Replacement facility (CMRR) at Los Alamos National Laboratory. These capital projects are key for ensuring safe, secure, and reliable uranium and plutonium capabilities for nuclear security and other important missions.

To power the nuclear navy, the budget request includes $1.2 billion for the NNSA's Naval Reactors program, an increase of 7.8 percent more than the fiscal year 2011 President's request. The programs in this appropriation support the U.S. Navy's nuclear fleet. Specifically, the request supports the administration's decision to recapitalize the sea-based strategic deterrent. The Ohio Class ballistic submarines, the most survivable leg of the Nation's strategic deterrent, are reaching the end of their operational life. The request will enable Naval Reactors to continue reactor plant design and development efforts begun in 2010 for procurement of long-lead reactor plant components in 2017, in support of Navy procurement of the first Ohio Class submarine replacement in 2019. Providing the Ohio Class replacement a life-of-the-ship reactor core will require substantial advances in manufacturing technology to provide a new cladding and a new fuel system. The request also supports the refueling of a land based prototype reactor, providing a cost-effective test platform for these new technologies.

Increased funding is also requested for the Spent Fuel Handling Recapitalization Project, which will replace the more than 50-year old Expended Core Facility as the location for naval spent nuclear fuel receipt, inspection, dissection, packaging, and secure dry storage. Fiscal year 2012 funding continues the conceptual design for the facility, equipment, and related systems, as well as continues meeting the National Environmental Policy Act's requirements and project oversight (e.g., engineering procurement and construction management). Detailed project engineering and design work will commence in fiscal year 2013 and construction will commence in fiscal year 2015.

These vital projects will replace facilities that date back to the dawn of the cold war with modern facilities that can support the full range of nuclear security missions—including maintaining the nuclear deterrent, preventing proliferation, securing vulnerable nuclear material, powering the nuclear Navy and providing the Nation with the best emergency response and counterterrorism capabilities possible. They will also ensure that NNSA can continue to work with the Department of Defense and other interagency partners to keep the Nation safe.

IMPLEMENTING THE PRESIDENT'S NUCLEAR SECURITY AGENDA

The fiscal year 2012 budget request also provides the resources required to continue to work toward the President's commitment to secure vulnerable nuclear material around the world within 4 years, a key national security goal. The budget request includes $2.5 billion for Defense Nuclear Nonproliferation in fiscal year 2012 and $14.2 billion over the next 5 years to reduce the global nuclear threat by detecting, securing, safeguarding, disposing and controlling nuclear and radiological mate-

rial worldwide, as well as promoting the responsible application of nuclear technology and science.

This request reflects the significant accomplishments of NNSA's nuclear nonproliferation programs in the past year, and seeks the resources needed to complete the President's goals. This budget request provides the resources required to meet commitments secured from international partners during the 2010 Nuclear Security Summit to remove all remaining highly enriched uranium (HEU) from Belarus, Ukraine, Mexico, and other countries by April 2012 and to work with the Defense Department to improve international nuclear security cooperation.

The request of $2.5 billion is a decrease of 5.1 percent from the fiscal year 2011 President's request, but an increase of 19.6 percent more than the fiscal year 2010 appropriation. This 5.1 percent or $138 million decline flows logically from the fiscal year 2011 request which was "front loaded" to accelerate the effort to secure vulnerable nuclear materials within the President's stated timeframe. Even with this decrease, the NNSA's budget request remains consistent with our overall strategy to ensure that programs supporting the President's commitment to lead an international effort to secure all vulnerable nuclear materials around the world in 4 years are fully funded in the request. The Global Threat Reduction Initiative efforts related to radiological material, as well as the International Nuclear Material Protection and Cooperation program's activities to enhance the ability of our foreign partners to detect nuclear smuggling at border crossings and in megaports have been prioritized to accommodate accelerated nuclear material lockdown efforts. The decrease in the request for Fissile Materials Disposition reflects the completion of long-lead procurements for the MO_X and Waste Solidification projects, as well as the decision to wait to request additional funds associated with the $400 million United States pledge for the Russian program until agreement is reached on milestones for the program.

IMPROVING THE WAY NATIONAL NUCLEAR SECURITY ADMINISTRATION DOES BUSINESS

Consistent with the President's commitment to deliver on critical national nuclear security missions at the best value to the American taxpayer, the fiscal year 2012 budget request will enable NNSA to continue to improve the way it does business and manages resources. The President's budget request for Federal oversight and staff included in the Office of the Administrator appropriation is $450.1 million, an increase of 0.4 percent more than the fiscal year 2011 request and an increase of 7 percent more than the fiscal year 2010 appropriation.

NNSA recognizes that the fiscal year 2012 budgetary investments come at time of severe economic challenge for our country and a renewed commitment to reduce the deficit. To maintain bipartisan support for the NNSA programs, the enterprise has a responsibility to work together as "One NNSA", a fully integrated enterprise that operates efficiently, is organized to succeed, that performs its work seamlessly, and speaks with one voice. This "One NNSA" needs to be a true partnership among Headquarters, the Site Offices and our Management and Operations (M&O) partners.

Changing the way NNSA does business is an important part of the effort to transform a cold war nuclear weapons complex into a 21st Century Nuclear Security Enterprise. NNSA simply cannot expect the Congress to support major investments in its programs and its facilities unless the enterprise can demonstrate that the Department of Energy is a responsible steward of the taxpayer's money.

NNSA needs to do better, which is why the Federal sector leadership is working with its M&O partners to streamline the enterprise governance model in order to devote more resources to critical mission work and maximize NNSA's ability to complete its mission safely and securely.

NNSA is making sure that it has the right contracting strategy in place. The agency is improving its project management by, for example, ensuring that NNSA no longer sets cost and schedule performance baselines on construction projects until design work is 90 percent complete, ensuring it has the right leadership teams in place, and performing independent cost reviews. NNSA has also created a new policy and oversight office for managing major projects. The new office reports directly to the Administrator. This will help ensure that project management gets the high-level focus it requires.

We are already beginning to see results. NNSA is increasingly recognized for its efforts to be an effective steward of tax dollars. For example, since 2007, NNSA's Supply Chain Management Center has saved $213 million by using pooled purchasing power to drive efficiencies across the enterprise. In the last year NNSA's Kansas City Plant won the prestigious Malcolm Baldrige Award, America's highest honor for innovation and performance excellence. Two other NNSA programs were

recognized with Project Management Institute (PMI) awards. In 2010, the Global Threat Reduction Initiative became the first Federal project to receive PMI's Distinguished Project Award, while the National Ignition Facility at Lawrence Livermore National Laboratory received PMI's project of the year.

CONCLUSION

The Nation has carefully evaluated its security needs in an international landscape that remains challenging and uncertain. NNSA has charted a path forward that shows our unwavering commitment to the Nation's security and enhances our formidable capabilities to address broader security challenges.

The NNSA is a technically based organization with a strong nuclear heritage that serves as the base for our contribution to a wide range of national security solutions. NNSA is rooted in the management of our Nation's nuclear weapons stockpile and the application of nuclear energy for naval propulsion. Additionally, NNSA capabilities support a broad range of U.S. and international activities that address existing dangers, identify and prepare for future challenges, and advise the U.S. Government and our international partners on nuclear security matters.

This budget request takes the NNSA into the next decade and strengthens the capabilities that are themselves integral elements of our nuclear deterrent. The challenge is to retain the capabilities that continue to be essential, and to identify and develop those needed for the future.

Senator FEINSTEIN. Thank you very much. I appreciate that.

Data provided by DOE and your entity shows that there are more full-time equivalent (FTE) staff working at the three nuclear weapons labs—Los Alamos, Livermore, and Sandia—than at the height of the cold war. In 1987, there were 12,160 FTEs when the United States had 23,575 nuclear weapons. In 2009, the labs had 13,977 FTEs when the United States had one-third the number of nuclear weapons, namely 5,113.

So, you have had 15 percent more FTEs to maintain a nuclear stockpile that is 78 percent smaller. Could you please tell us why?

Mr. D'AGOSTINO. Yes, ma'am. I think it's due to a couple of reasons, and I—if it is possible, I would like for my colleagues to also answer—follow on with me behind me.

I think one of the main reasons is we have an inherently different program now than we had during the height of the cold war. During the height of the cold war, we were in the process of constantly cycling and training and designing, develop, test, deploy, and take out systems, so there was a constant flow in production. And that type of a process allows a very efficient design through production through finishing off a life-cycle process, if you will, in our weapon systems. And we are obviously doing underground nuclear tests.

Now, we are relying on science a lot more, if you will, to ensure that we can take care of these—the stockpile without underground testing. That is a completely new era that we have had to, in fact, invent, if you will, with our laboratories to develop the tools, deploy the tools. Tools in this case I am talking about are computers, are large, experimental facilities, like the dual access radiographic hydro test facility at Los Alamos, the National Ignition Facility at Lawrence Livermore, the Z machine at Sandia—develop these tools in order to do a lot more subcritical experiments and basic science and material experiments and use the codes to do this. And this requires a tremendous amount more, in my view, of scientists and engineers in order to achieve that capability.

So, the job, I think, in many respects is a harder job, and is not directly attributable one-to-one to the size and number of the stockpiles.

I think the second major reason is we have, in my view, particularly as we look at the data, an increase in the recognition of how these laboratories contribute to a much broader range of national security and nuclear security work than they did 20, 30 years ago. We are obviously—in many cases, our response, the DOE's response, to the Macondo oil spill—the BP oil spill is what it has been called—much of that technology came from three national security laboratories themselves. I would ask Don to add.

Dr. COOK. I think it is a good question. Madam Chairman, if I could add to what the administrator has said, I would emphasize that we do have a broader range of work for multiple agencies. The national weapons labs especially are very important capabilities. They are accessed routinely these days by the Departments of Defense, Homeland Security, and Director of National Intelligence, in addition to DOE.

With regard to the stockpile, it is true that we have the oldest stockpile we have ever had.

Senator FEINSTEIN. Well, that is going to continue.

Dr. COOK. Yes. Yes.

Senator FEINSTEIN. I mean you are just going to build the stockpile.

Dr. COOK. I think that is a clear statement. It is going to continue. It is also currently the smallest stockpile we have had since the days of the Eisenhower administration. The fact that it is the oldest and smallest means now that as we go forward, while we may continue to reduce warhead numbers, we must modernize, at the same time, the deterrent warheads and the infrastructure. And those are key contributors to the size of the workforce that we have.

Senator FEINSTEIN. Just as an aside to my colleague, you know when I was mayor of San Francisco—it has been that long ago—we computerized the city. I had the computer companies in and talked to them because it was a big contract. We thought oh, it would save the city money. I think it was a substantial number of employees, in the thousands; I cannot remember what. So, we did it. Do you think it reduced employments? No. It increased employments. So, you know, I think there is that factor that technology does not necessarily reduce employees qualified to handle the technology.

But since it is just the two of us, and I will give the ranking member as much time as he wants, I want to just ask one other question right now.

Senator ALEXANDER. Please go ahead.

Senator FEINSTEIN. I expressed some concern about the risk of insiders stealing or helping to steal nuclear materials, and I think the large number of sites around the world magnifies that threat. For example, Russia and countries in the former Soviet Union alone have more than 230 buildings at more than 130 sites that store weapons usable nuclear materials.

So, the question is, what is NNSA doing to consolidate nuclear materials to a much smaller and easier to protect number of sites and buildings, especially in Russia?

Mr. D'AGOSTINO. If I could start and then ask Anne Harrington to follow on.

Senator FEINSTEIN. Please.

Mr. D'AGOSTINO. But we have a very active program with the Russians to not just secure material at their sites, but we have a sustainability component with the Ministry of Defense in Russia. We have essentially completed the security work there, and they have agreed and are following up on making sure that those security upgrades are maintained and to have them out into the future.

With Rosatom, which is what—a little bit more on the civilian side or a little bit more equivalent to the NNSA, we have an active program of upgrading their sites there, and we have more of a cost-share arrangement to do on the work there.

There is more work that has to be done in Russia, and Anne's team is working actively to partner with our colleagues there to make this happen.

Senator FEINSTEIN. Let me just stop you. Does it need 230 buildings at 130 sites?

Mr. D'AGOSTINO. In fact, this is one of the concerns that we, together with the Russians, acknowledge that the more material that you have and more sites there is, the harder it is to protect. In this country, we have undertaken our own efforts for material consolidation because in the long run it is cheaper to protect material at fewer sites.

Senator FEINSTEIN. How many sites do we have in comparison?

Mr. D'AGOSTINO. Well, the 230 sites are—we have our 7 main sites, but within those 7 sites we are looking to move material out of the Lawrence Livermore Laboratory to reduce the security footprint and move some of that material into some of our other sites because we think it is not just safer to protect, but it is also cheaper. We hope to be saving some security dollars as a result of that.

Senator FEINSTEIN. We will mark that down.

Mr. D'AGOSTINO. Anne, do you want to add anything, please?

Ms. HARRINGTON. I would just add that it is a matter of our program policy that any country in which we work, we do encourage the consolidation of materials. And, in fact, that is what the 4-year effort is really aimed at, is not just consolidating materials, but consolidating and then removing the materials permanently, and then providing physical security upgrades in that interim period between when we negotiate the agreement and physically remove the material.

Senator FEINSTEIN. Ma'am, let me just interrupt you again. I understand that April 2010 was the halfway mark of the goal of securing all vulnerable nuclear materials in 4 years. Are you on track to secure it all in 4 years?

Ms. HARRINGTON. Well, April 2010 would have been 1 year, so approximately now would be 2 years from April, yes.

Senator FEINSTEIN. Well, now it is 2 years.

Ms. HARRINGTON. Yes, correct. We are about halfway at this point.

Senator FEINSTEIN. So, you have 2 more years.

Ms. HARRINGTON. Correct. I have to admit the continuing resolution situation that we have been in up until recently this year has presented some real challenges in terms of maintaining our schedule. We have deferred some other activities in order to keep these removals on schedule. We will have perhaps a little slippage, but

not out of calendar years. We certainly are on track right now with Ukraine, Mexico, and Belarus to meet those high-level nuclear security summits commitments to remove all materials by the time we hit the 2012 summit. So, we feel confident right now that we can make up——

Senator FEINSTEIN. You could make that 2-year goal.

Ms. HARRINGTON. We are on schedule to do that right now.

Senator FEINSTEIN. One quick question, are you prioritizing the sites?

Ms. HARRINGTON. Absolutely.

Senator FEINSTEIN. So, there is a list of priorities?

Ms. HARRINGTON. Correct.

Senator FEINSTEIN. Could we see that list please?

Ms. HARRINGTON. We can get that to you, yes.

Senator FEINSTEIN. Okay. Thank you very much.

Mr. Vice Chairman? You go ahead, and then we will go back and forth.

Senator ALEXANDER. Okay. Thanks, Madam Chairman.

Mr. D'Agostino, I would like to have just a little conversation with you about big projects and bringing them in on time and on budget. I mean, you have got a former mayor here and a former Governor here, so we are frustrated by the lack of executive opportunities we have in the U.S. Senate. So, this is a chance for us to weigh in.

But you have got some really big things going on. I mean, the Uranium Processing Facility (UPF) is estimated to cost $4.2 to $6.5 billion. That is a pretty big range. I mean, and a few years ago it was $1 billion, and then it was $2 billion, then it was $3 billion, and it is still going up. The Chemistry and Metallurgical Research Facility at Los Alamos, the range for it is $3.7 to $5.8 billion, and that is a massive range. And then we can go down the list of other big projects. Mixed oxide fuel, which is nearly $5 billion. The Life Extension Projects that is part of our nuclear modernization, those are $3 billion and $4 billion. So, these are big, big projects. And I remember the excitement that happened in Oak Ridge when the Spallation Neutron Source came in on time under budget, although it was a massive physics project.

So, what can we do to be helpful to administrators, such as yourself, to set up a process by which we can take these big—I mean, I can add up at least $20 billion of projects over the next few years just in your area, and come up with a goal and a design, and then together we will see if we can stick to that goal and design and see if we can do it in a way that does what we need to do, but at the least possible cost.

I know that is your objective, but sometimes that is hard to do in Government. What can we do to help you achieve that?

Mr. D'AGOSTINO. Senator Alexander, first of all thank you. I appreciate the opportunity to talk to executives in this fashion and get your insight as well.

I think one of the main things as a subcommittee that you can do is give us the time to interact in sessions such as this and in other sessions where we can talk about, on a fairly regular basis, our progress, our plans, and our steps on meeting our, essentially, our collective objectives of providing the Nation the capability. The

objective is not to spend all that money; that is not the objective. The objective is to get the capability for the Nation, as you said, in a fashion that gets it on time, on budget, and what the country needs to move forward. So, time with you, Sir, with the subcommittee as a whole, with you and your staff, and reporting, you know, on the appropriate basis is very helpful to us.

Senator ALEXANDER. But would not the first thing to do to be—to get a design and a cost estimate that you can live with? Would that be the first thing? How do we get to that point?

Mr. D'AGOSTINO. I basically see three broad steps that we are in the process of taking and either have completed or need to finish off on. One is getting our policy—project management policies correct. We have in the Department, most recently within the last year, and now are implementing in our projects, whether they are small dollar projects or billion dollar projects, a couple of key principles. And that is, we do not go off and declare what something is going to cost until we actually know what it is we are building and we have that design largely completed. Once that baseline is set, then it sticks. That would be one thing.

The second thing is annual detailed independent peer review analysis. One of the things that we have learned from the Office of Science, which talked about the spatial neutron——

Senator ALEXANDER. Analysis of what, of the construction?

Mr. D'AGOSTINO. Of the construction project—of the project itself, independent peer reviews on an annual basis of the projects themselves, so this is something we are committed to doing. And, in fact, for two of these large facilities that we were just talking about, that is actually under way. My principal deputy, Neile Miller, sitting behind me, has started this type of an interaction and dialogue with the Defense Department, people outside of the NNSA and even outside of DOE, to bring project experts and other experts that independently check our work on a regular basis. That is another important policy element that we have in place.

The next important thing is bringing the right people to bear on the problem. One of the great things that Neile Miller has brought to the table is looking at and recognizing that over the next 10 years, project management is our—has to be our key focus in this organization because that will define, first of all, can we——

Senator ALEXANDER. Well, let me not be rude and interrupt.

Mr. D'AGOSTINO. Yes.

Senator ALEXANDER. Let me go—get you to slim that answer down a little bit. I mean, what are the three steps you need to take? Do you not first need to design—you first you need a policy.

Mr. D'AGOSTINO. We have to get the policy right.

Senator ALEXANDER. Right.

Mr. D'AGOSTINO. We have to get a design——

Senator ALEXANDER. Then you have to get a design.

Mr. D'AGOSTINO [continuing]. That we have actually checked on, that has been independently checked to be true and been validated—independently checked and validated.

Senator ALEXANDER. Then you need a cost estimate, is that fair?

Mr. D'AGOSTINO. That cost estimate and the design will go together.

Senator ALEXANDER. So, those come together.

Mr. D'AGOSTINO. We have a schedule.

Senator ALEXANDER. So, once you have a policy and a cost estimate design, then you are ready to go, is that——

Mr. D'AGOSTINO. Then we are ready to go——

Senator ALEXANDER. Right.

Mr. D'AGOSTINO [continuing]. And then we will come back and——

Senator ALEXANDER. And then it is the regular review of your progress toward a goal.

Mr. D'AGOSTINO. Right.

Senator ALEXANDER. And our involvement in that—well, lets just—take these two examples of the UPF—I mean, there you have got $4.2 billion to $6.5 billion in the Chemistry and Metallurgical Building at Los Alamos, $3.7 to $5.8 billion. How soon before we get—is the policy set on those two projects?

Mr. D'AGOSTINO. Yes, it is, to get 90 percent design on those projects, yes, Sir.

Senator ALEXANDER. Okay. When we do we get 90 percent design on those two projects?

Mr. D'AGOSTINO. October 2012, is that right, Don?

Dr. COOK. Yes. It is the end the end of fiscal year 2012.

Senator ALEXANDER. Yes, the end of next year——

Mr. D'AGOSTINO. Yes.

Senator ALEXANDER [continuing]. We will have our policy and our cost-estimate design at some number.

Dr. COOK. That is correct. We are now just a bit beyond 50 percent full engineering design on each of the two projects, chemistry and metallurgy research, UPF. Another step we have taken is to require actually the parent companies to integrate the design teams, look for common buys, gloves boxes we will use in both facilities, develop a plan of phasing that allows us to build—these are, after all, new nuclear builds. They are the hardest categories to replace capabilities really that have exceeded 60 years of age.

Senator ALEXANDER. Right. So by the end of next year there is a design and a cost estimate. But between now and then, what do we need to know about what you are doing to help you get a cost estimate you can live with? I mean, what do we need to be doing?

Mr. D'AGOSTINO. Well, Sir, you need—one of the things you will need to know is that we are not just resting on input we are getting from our M&O contractors. We are having these independently checked on one case, and we are probably going to have two independent checks because these are such large facilities. The one that we are doing with our colleagues in the Defense Department, and we will commission another independent check ourselves separately from that because one of the things I want to get us in the habit is under promising and over delivering, and when we make a commitment we deliver on that commitment.

Senator ALEXANDER. Well, we can continue this discussion another time. But to me, this boils down to a pretty simple thing, from our point of view, a very complex operation from yours. But it is to define the points where we get a real cost estimate and a real design and we say okay, that is it, you know. And we are then going to probably embark on a 3-, 5-, 6-, or 7-year period, right, of construction.

Mr. D'AGOSTINO. Yes, Sir.

Senator ALEXANDER. And so, during that period of time we should be having quarterly discussions about are you on schedule? If you are not, why not, so that we do not wind up and find that a $4 billion cost estimate ends up being a $7 billion——

Mr. D'AGOSTINO. We would be happy to come up quarterly during the period of time as we get into construction in order to let you know the progress. We will be getting ourselves monthly updates on earned value as well. So, I think rolling it out on a regular basis so you have confidence that we are on track is——

Senator ALEXANDER. Madam Chairman, that sounds awfully primitive for me to suggest, but it is almost a matter of being that simple from our—I mean, if every 3 months all they have to report is we are under budget and we are on schedule, then the meeting might last 10 minutes. If it is not, why, it might take a longer period than that.

Senator FEINSTEIN. I understand that, right.

Senator ALEXANDER. So, I have some other questions, but I think I will stop now. Thank you for your courtesy.

Senator FEINSTEIN. Okay, all right. Let me just put my philosophy on the table, which I think you already know. I am not for new nuclear weapons. I will do everything I can to prevent the development of a new nuclear weapon. I want to see them gone all over the world, and I will support any program to get that done, and I think I have been fairly consistent. We have had this discussion before, and you know where I stand.

Okay. As you know, the JASONs have found that most plutonium pits have a lifetime of at least 100 years. It is my understanding that once again you are planning to manufacture new plutonium pits for weapons undergoing life extensions. The question is why.

Mr. D'AGOSTINO. I will start and then I will pass to Dr. Cook to add to that with some details.

The JASONs did validate the analysis that we have performed at our laboratories that pit aging is not the issue that we once thought it was 8—7, 8 years ago or so. And that is actually a great thing because had it been the case where plutonium aging was one of the things that we would have to more aggressively go after, we would be looking in—at a situation—looking at a different type of a problem on the need to have a higher pit production capacity.

The plutonium production pit sustainment effort itself that Don's program runs has a large part, in my view, couple of components to it. One is bringing back and maintaining a capability, maintaining a very small set of expertise in order to—for the Nation to be able to respond to unknown technical changes as a result of dealing with this very unique material that is a manmade material that we have a fairly limited data set of knowledge on. It has been around for 60 plus years or so, and that is about all the information we have on it. So——

Senator FEINSTEIN. Let me cut to it. If the pits are all good, why do you want to manufacture new pits?

Mr. D'AGOSTINO. Don.

Dr. COOK. Again, I think it was a very good question. Let me try to give a quick technical answer.

JASON determined that the lifetime of the plutonium parts in pits are good for 100 years or 80 was their conclusion. Due to plutonium decay, which is by alpha—that is helium—that interstitially causes a potential problem.

The actual problems that we have go well beyond that. We have the plutonium pits in the midst of the chemistry of high explosives with binders that decompose just like plastics in cars exposed to the sun. The plutonium is radioactive; the decay goes on. That degrades all of the plastics, all of the cushions, all of the things that are around the pit. And it also causes corrosion in the pit.

So, on the one hand, JASON is absolutely correct about what they said, but the difficulty is that as weapons get older, much of the chemistry in a radiolitic environment starts to take over. And that has been the problem.

Senator FEINSTEIN. Yes.

Dr. COOK. And we have invested many of the people and time in surveillance to actually pin down in which weapon systems we are seeing those kinds of problems, and we can predict how long they are good for. Those are not good for 100 years.

Senator FEINSTEIN. Well, I think I would like to have a discussion with the JASONs, and particularly SIDREL. I have discussed this in the past, and I would like to do it again, and I would like to do it with both of you present——

Dr. COOK. I absolutely support that.

Senator FEINSTEIN [continuing]. And Senator Alexander, because I hear different things. It is fair to say that you all wanted to develop new nuclear weapons. That's what RRW essentially did. It was killed because of it, and I do not want to see, you know, RRW in disguise right now.

Mr. D'AGOSTINO. We would be glad to come up and talk to you, Senator, in a session. The key here are no new pit nuclear component designs and we are very consistent with that. I think Sid and I will be on the same page with this, but we would like to be able to show you personally.

Senator FEINSTEIN. Because what you have always led me to believe is that modernization is really for the protection of the workers who work around some of the chemicals that are extraordinarily dangerous and may be deteriorating. But I was under the express belief, based on some of our discussions, that all of these new pits that were requested some years ago were really forming the foundation of a new nuclear weapon, not just a modernized nuclear weapon.

Mr. D'AGOSTINO. Senator, I want to make sure I am clear on what our plan is on plutonium sustainment so there is no question about it.

What we are planning on doing is manufacturing a pit design that we currently have in the stockpile of a particular warhead and wanting to—because those we have very few of. And we believe that in order to reduce the size of the stockpile, that particular pit design, which already exists—it is not a new pit—is going to be the pit design that will allow us to potentially consolidate the number of different types of warheads and allow us to reduce the overall number of warheads.

Senator FEINSTEIN. Okay.

Mr. D'AGOSTINO. That is the key.

Senator FEINSTEIN. So, how many pits are you talking about?

Mr. D'AGOSTINO. On the plutonium sustainment? Don, what—are there 20 per year?

Dr. COOK. The answer in terms of our capability——

Mr. D'AGOSTINO. Yes.

Senator FEINSTEIN. No, amount total to manufacture under this proposal.

Dr. COOK. Let us see. We have been required by the Department of Defense, by U.S. Strategic Command, and by the requirements that we have laid to have a capability that is not less than 50 pits per year nor more than 80 for the——

Senator FEINSTEIN. So, are you saying to produce 50 to 80 new pits a year?

Dr. COOK. That to have not less than 50 and not more than 80 is the——

Senator FEINSTEIN. Produced each year?

Dr. COOK. That capability requires, yes, that is correct.

Senator FEINSTEIN. For a total of how many new pits?

Dr. COOK. That is the number per year, and so if one calculates the number of years you would get that. It is consistent with the——

Senator FEINSTEIN. Calculated how many years?

Dr. COOK. It is consistent——

Senator FEINSTEIN. Somebody must know how many pits you plan to make.

Dr. COOK. Yes. It supports a stockpile of 3,000 to 3,500 weapons in aggregate, the total as the Nuclear Posture Review and the national policy has laid out. Not that many will be on active alert, but that is the requirement for the total number including those——

Senator FEINSTEIN. So, what you are telling me is that the administration's design, or the Government's design, is that there are essentially 3,500. Well, I will not use the word new nuclear weapons, but with new pits essentially within what period of time?

Dr. COOK. I—you know, I do not want to say that every one of those is a new pit. The capability that we are putting in place has that capability to manufacture that number of pits per atom—per annum, and the comparable number of secondaries in UPF at Y–12, if required. Overall, the capabilities support the stockpile as envisioned in the Nuclear Posture Review, the new START requirement. And the plan to continue to reduce the number of nuclear weapons——

Senator FEINSTEIN. To what?

Dr. COOK. All together.

Senator FEINSTEIN. If you had these pits, how much would you reduce the stockpile by? I mean, this is important.

Mr. D'AGOSTINO. Yes, it is very important. We have a report called the Stockpile Stewardship Management Report. There is a section in it that is classified which goes system by system, and it talks about taking—there are two numbers there. One is obviously bigger than the other one. I would say just quick math off the top of my head, there is about, if you will, once the capability is in place, maybe a 40 percent reduction in the size of the stockpile.

Senator FEINSTEIN. I do not want you to do it off the top of your head as much as I think you are terrific.

Mr. D'AGOSTINO. Yes.

Senator FEINSTEIN. This is a big thing for me.

Mr. D'AGOSTINO. Sure.

Senator FEINSTEIN. I mean, it is one of the reasons why I am sitting right here—why I run for this office, because I want my grandchildren and their children to grow up in a nuclear-free world. I am going to do everything I can to be helpful to get there. So, this is not something that I am just going to fluff off and forget about.

Mr. D'AGOSTINO. Madam Chairman, I would say we have the details that we would like to share with you in the report that we provided, and we will go over that in great detail with you, with our Defense Department colleagues to show about the types of changes that we are—that we collectively are planning on making in our proposal, if you will, which this budget is a part of. It is—budget——

Senator FEINSTEIN. Because the way you have always sold your program to me is that if we do this, we can reduce the stockpile by more.

Mr. D'AGOSTINO. Yes, ma'am, that is the case.

Senator FEINSTEIN. You gave me some numbers before, but I did not think they were very sufficient. So, I want to know with this proposal and all this money you are getting, by how much will the nuclear stockpile be reduced?

Mr. D'AGOSTINO. We will be glad to go over that with you precisely by—with actual numbers and warheads.

Senator FEINSTEIN. Okay. Thank you.

Senator Alexander.

Senator ALEXANDER. I have three questions, and they do not necessarily require long answers. But I would like to ask all three questions——

Senator FEINSTEIN. Go ahead.

Senator ALEXANDER. Mr. Administrator, I am a little puzzled by your single-mindedness on consolidating the contracts that—at Y–12 and Pantex. I mean, they do not have overlapping missions. They both seem to be operating efficiently right now. You have got all these big projects to supervise and try to do as efficiently as possible. GAO has been studying the consolidation proposal, and a preliminary report suggests it is not a great opportunity for savings.

Would it not be better to defer any decision about consolidation until we get the GAO report in July, and instead focus more of your time on working with the existing contractor to find savings and on other big projects where you might find savings?

Mr. D'AGOSTINO. Senator Alexander, we are committed to working with the existing contractor, and have worked with the existing contractor to identify savings, and have gotten—received some input from the existing contractor, who is doing a very good job.

We have been looking at ways to make sure that we run our enterprise in the most efficient and integrated fashion as possible. One of our views is that we are looking to have an enterprise, if you will, not eight independent sites make maximizing their capability at their sites. And, in fact, I have studied this for about 3

years. We did not just study it ourselves. We asked an external consultant known as Navigant Consulting, to take a look at what opportunities there are specifically at each of these sites, and what could the Federal Government realize from the standpoint of efficiency improvements, couched in dollar terms, of course, but our goal, of course, is to drive those resources into mission critical work and have the workforce realigned from that standpoint.

So, we have done a study ourselves. We, in fact—we commissioned a completely independent study, which showed many hundreds of millions of dollars per year as an opportunity over the next 10 years that could be saved—many hundreds of millions of dollars.

I have not seen the GAO study. I recognize that there was a press report I think that just came out recently. But what I will say is—and I am anxious to see it frankly because it is important for us, and this is why we are proceeding methodically to make sure we get input from the contractor community before we make a final decision. A decision will rest essentially with the—the Secretary and I will go through and we are going to conduct our external checks to make sure that things are done in an appropriate manner.

This is probably, you know, one of the more important decisions we will be making this year, and I am committed to making sure that we have all the data. If the GAO has uncovered new information, I want to make sure that gets factored into our analysis and the like.

I do believe in discussions that are very sensitive to the particular point on disruption of potential contract competition might have on very important work that is ongoing. And we have looked ahead at when we expect to be at the 90 percent design points and what it will take to independently check those. And, as Dr. Cook mentioned, the end of next year is roughly a period of time that—where that comes to play. And it is clear we probably would not want to have any changes prior to that point because as—because of the disruption piece.

But we have managed contract changes in the past, and we know it can be done in a way that does not impact the workforce and does not disrupt, more importantly, the workflow that happens there as well.

Dr. Cook, if you have any other insights on this.

Dr. COOK. I would just say we are paying particular attention to making sure that we are not doing anything to destabilize the UPF team or any of the M&O teams. They continue to do very high-quality work.

With regard to the cost savings, it is not our objective to reduce the employment levels. It absolutely is our objective to increase productivity, not just through consolidation if appropriate of contracts, but the linking of the deliverables through all that we do. And we are studying that fairly intensely as you might normally expect.

Senator ALEXANDER. Thank you. The new mixed oxide fuel that will be produced at Savannah River—do you have any concerns about its safety if it is used in Tennessee Valley Authority reactors? And should it be less expensive fuel for the reactors, thus saving the Tennessee Valley Authority (TVA) rate payers money?

Mr. D'AGOSTINO. I will start, and then I will ask Dr. Harrington to follow.

We have done, and there have been done a number of studies with respect to mixed oxide fuel. It is the material—fuel material that has been around for a while and has been in many tens of reactors worldwide and operating for more than 20 years. So, I think the safety aspect of this is well established.

We, of course, will continue to study this with potential buyers at TVA, for example, to make sure that they have complete and full access to any information they need to make sure that they are confident in that.

Senator ALEXANDER. My question simply is, is it safe to use it, and will it be cheaper——

Mr. D'AGOSTINO. Yes.

Senator ALEXANDER [continuing]. To use it?

Senator ALEXANDER. The answer is, yes, it is safe to use.

Ms. HARRINGTON. Yes, it is. And I think on the question of cost, obviously this is a nonproliferation program; it is not a commercial fuel program, so there is that difference. And the cost will be no more than and perhaps less than other commercially available fuel.

Senator ALEXANDER. Thank you. Madam Chairman, I have one other question, but I will defer to you for——

Senator FEINSTEIN. No, please. I think I have satisfied my questions, and I am going to follow up on the items of interest to me.

Senator ALEXANDER. I have got an idea you were going to do that.

But my question is simply for the Admiral, and it goes back to what I said. The Navy operates small reactors, and it has about the same number of small reactors that we have civilian reactors around the country, all of which are large. In the civilian area, we speculate—I know Dr. Chu has talked about this—that a small reactor might be a useful way for the United States to move ahead with nuclear power, maybe 125, 150 megawatt reactors. What can the Navy's experience with small reactors teach us about how we might move ahead in the civilian side with small reactors?

Admiral DONALD. Yes, Sir. Thank you for the opportunity to be here today.

Senator FEINSTEIN. Could you qualify small reactors?

Senator ALEXANDER. Well, a small reactor—a typical one like the new one, Watts Bar reactor being built at—by TVA is 1,180 megawatts. A small reactor, such as the one that B&W proposes to build would be about 125 megawatts. And 125 megawatts, Dr. Chu has talked about a small reactor of that size would be a lot cheaper to build, and it would be about enough power to operate the entire Oak Ridge complex, for example. The city, the laboratory, and the Y–12 facility might all operate with that one small reactor. The argument for it is it could be made in the United States, shipped to Oak Ridge or Alaska, wherever they want to use them. And if they needed two, they could put two side by side or three side by side. That is the argument for it.

But with the Navy having all this experience since the 1950s, so successful with small reactors, I wonder—if we are taking advantage of your experience or if this is one silo over here and this is another over here.

Admiral DONALD. Well, Sir, I think you really have to go back to the very beginning of the commercial nuclear power program. Where it started was with naval reactors. Amarico, we are building the shipping port plant in Pennsylvania. Really that design stemmed from what he had learned from building the Nautilus and subsequent submarine plants and the technology—basic pressurized water reactor technology, which is one of the options for small modular reactors. That really was founded in the Naval Reactors Program and has been developed through the Naval Reactors Program with collaboration in commercial industry either directly or indirectly. We have had engagement with commercial industry over our history in design work and things of that sort. Indirectly there are a significant number of employees working in commercial nuclear who started in the Navy nuclear program. So, many of the standards and technologies and things that they learned in our program, they have transitioned into the commercial sector.

With specific focus on the small modular reactors that are being discussed today, in fact Babcock and Wilcox, B&W, who is—has one of the options for a small modular reactor in power, I believe it is called, it just so happens that they also are one of our major suppliers, and they do much of our work. In fact, about 70 percent of our industrial base is really B&W type work that is done. So, there is some leveraging there of lessons that they have taken from building our plants, obviously with protecting our security, our classified information, but translating that into what could be a viable small modular reactor. So, I think that is a good synergy there if that is to be made to happen.

I think there are those who—some have considered should we just transition naval reactors directly into small modular reactors, and the fact of that is that is probably not a good idea. Because of the standards that we build them to, we have to have shock standards that are significantly above what a commercial reactor would have to operate at.

Our operating profile is very different from a commercial plant, so we design them for different ends, and they actually would likely not be cost effective for a commercial application. But again, the application and the synergy between the industrial base in the commercial world and the industrial base in the naval world I think provides opportunity for them to learn from what we have learned and provide opportunities in small modular reactors, if the commercial industry sees them as being feasible.

ADDITIONAL COMMITTEE QUESTIONS

Senator ALEXANDER. Thank you, Madam. Thank you, Admiral. Thank you, Madam Chairman.

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

QUESTIONS SUBMITTED BY SENATOR DIANNE FEINSTEIN

Question. The National Ignition Facility (NIF) was supposed to demonstrate ignition by September 2010. However, the goal of achieving ignition has been postponed by more than 1½ years because of unexpected scientific and technical challenges.

How confident are you that the NIF will achieve ignition by June 2012? If this goal is not achieved by then, what does it mean for the future of the ignition program?

Answer. Pending any unforeseen major technical challenges, I am confident in NIF's ability to achieve ignition by fiscal year 2012. NIF is currently operating on a schedule where as by the end of fiscal year 2011, all of the experiments and capabilities required for the NIF to begin ignition experiments will be complete, and the goal is to demonstrate ignition, or "gain equal to one", by fiscal year 2012. "Gain equals one" means the capsule will produce more energy than the amount of energy delivered to the target, also called the hohlraum.

An National Nuclear Security Administration (NNSA) panel chaired by the Under Secretary for Science, Dr. Steve Koonin, has been formed to advise on technical progress, and the most recent review showed that the National Ignition Campaign (NIC) is making excellent technical progress. The principal focus is to ensure that a rapid, yet reasonable, amount of progress is being made on completing the scheduled ignition efforts. The NNSA's major concern is to ensure that further delays do not occur, except as a result of presently unknown technical issues that might have to be resolved. Ignition is a major technical challenge and the present NIF work is a culmination of decades of research. Should any unforeseen major technical issues arise that could potentially impact the goal of achieving ignition by fiscal year 2012, NNSA will re-evaluate and adjust the goals of the NIC accordingly.

Question. NNSA owns 43 million square feet of physical infrastructure.

What plans does NNSA have in place to reduce the footprint of the labs and production facilities and reduce maintenance costs?

Answer. NNSA is continuing its footprint reduction efforts within available funding. The fiscal year 2012 Stockpile Stewardship and Management Plan conveys NNSA's strategy to consolidate and modernize the Nuclear Security Enterprise.

NNSA has actively been working to comply with the Energy and Water Development Subcommittee fiscal year 2002 conference report 107–258 for reduction of footprint. For the period 2002 through 2009 NNSA constructed 1,447,865 gross square footage and eliminated 3,700,620 gross square feet of facility footprint. The net result of these efforts is elimination of approximately 2,252,755 gross square feet of the NNSA footprint. NNSA will continue working to meet this requirement by reducing excess facilities as funds allow and by using footprint reductions to ensure the offset requirement is met.

Question. NNSA has been criticized over the last several years for failing to maintain an adequate surveillance program, which is essential for determining the health of the nuclear weapons stockpile.

To what extent has NNSA improved its surveillance program and addressed the concerns of the JASONs, lab directors, and the Department of Defense (DOD).

Answer. Surveillance activities are essential to enabling continued certification of the reliability of the stockpile without nuclear testing. Surveillance involves withdrawing weapons from deployment and subjecting them to laboratory tests, as well as joint flight tests with the DOD to assess their reliability. These activities allow detection of possible manufacturing and design defects as well as material degradation over time. NNSA continues to implement a surveillance program that builds on those core activities, which allows us to support the current state of the stockpile, detect in advance potential problems, and take remedial actions.

NNSA has reviewed the stockpile surveillance program and its funding profile. Since fiscal year 2009, the surveillance budget has increased by 50 percent, from $158 million to $239 million. In the fiscal year 2012 budget, the President seeks to sustain this increase and a more robust surveillance program throughout the fiscal year NSP.

With this increased funding, many improvements have been made on surveillance. NNSA increased the number of planned laboratory and flight tests from 48 in fiscal year 2010 to 74 in fiscal year 2011. The total number of planned major surveillance activities (including pit, canned subassembly, gas transfer systems, detonator cable assembly tests and disassembly and inspection) also increased from 276 in fiscal year 2010 to 432 in fiscal year 2011. In addition, surveillance activities supported the development of diagnostic capabilities at Y–12 for critical components of the nuclear explosive package. These capabilities will aid the current W76–1 production and surveillance of other warheads in the stockpile. This increased testing rate and improved diagnostics continue to be supported in the fiscal year 2012 budget request. Furthermore, NNSA has taken action to hire a Surveillance Senior Technical Advisor, supported by an appropriate staff through a newly developed Surveillance Governance structure to assure a cohesive program, enables a cost-effective program, and integrates surveillance activities across the nuclear weapons enterprise. Together, the increased funding, additional focus, and hiring of a senior surveillance

engineer should address the concerns expressed by the JASONs, laboratory directors, and DOD.

Question. The JASONs found that most plutonium pits in nuclear weapons have a lifetime of at least 100 years. However, NNSA is planning to manufacture new plutonium pits for weapons undergoing life extensions.

Why does NNSA have plans to manufacture new pits? What are the advantages and disadvantages?

Answer. The Nuclear Posture Review (NPR) found that in order to sustain a safe, secure, and effective U.S. nuclear stockpile, for as long as nuclear weapons exist, the United States must possess a modern physical infrastructure and a highly capable workforce with the specialized skills needed to sustain the deterrent and support the President's nuclear security agenda.

In 2006, the Los Alamos National Laboratory and Lawrence Livermore National Laboratory reported that the majority of pits in the stockpile can have estimated "lifetimes" in excess of 85 years or more based on the best estimates of plutonium changes with aging. All nuclear weapons generally and primaries specifically have other components with much shorter shelf lives that have to be maintained or replaced on a more frequent basis. Finally, as recognized by the JASONs and NNSA, the science of plutonium aging is not complete. The uncertainties in these estimates are large and contain significant variables which may affect plutonium and pit lifetime that are not yet fully understood. As the weapons age, they must be maintained in order to assure their reliability and extend their lives. Throughout this maintenance or life extension process, NNSA is directed by National Security Presidential Directive 28 to look for opportunities to enhance the safety and security aspects of the weapon (while still meeting the military requirements originally established for the weapon). One of the ways to enhance both safety and security is to move toward a stockpile that is based on insensitive high explosives (IHE) instead of conventional high explosives (CHE). IHE-based weapons are safer in almost every environment across the Stockpile-to-Target Sequence. Should NNSA receive authorization to proceed toward a totally IHE-based stockpile, we will need the ability to either manufacture these previously designed and tested pits or perform rework on existing pits.

The current facility that NNSA manages for producing plutonium pits requires modernization to continue maintaining a "safe, secure, and effective" stockpile in the future. The manufacturing capacity will need to be increased to meet the anticipated requirement of 50–80 pits per year by 2022. The aging infrastructure is being addressed through TA–55 reinvestment. Additional programmatic investments will be required to develop and sustain the workforce required to execute the program at TA–55 in the coming years. What we are doing now is an effort to create a sustainable plutonium pit manufacturing capacity at the PF–4 facility that will be able to support the body of work addressed in the fiscal year 2012 Stockpile Stewardship and Management Plan. Moreover, the PF–4 facility is an important component of the administration's effort to provide a sustainable Nuclear Security Enterprise. Such a facility is one of the enablers for the United States to shift away from retaining large numbers of nondeployed warheads as a hedge against technical failure or geopolitical surprise.

The pit manufacturing capability being pursued for PF–4 will provide NNSA the ability to produce a limited number of new pits, up to 80 per year, or to perform rework on existing pits—this does not mean that each year we will exercise the full capacity of the facility. PF–4 will provide NNSA with the minimum capacity to support the President's plan to life extend the stockpile. Per the NPR, each life extension program will be conducted on a case-by-case basis and we will study options for ensuring the safety, security, and reliability of each nuclear warhead. Our scientists, engineers, and technicians will study the full range of life extension approaches, to include refurbishment of existing warheads, reuse of nuclear components from different warheads, and replacement of nuclear components. In any decision to proceed to engineering and development, strong preference will be given to the refurbishment and reuse approaches. However, we may not be able to meet some critical Stockpile Stewardship and Management Plan goals, such as increased safety, security, and reliability, using those two approaches. In such cases, replacement of nuclear components will be pursued, but only when specifically authorized by the President and approved by the Congress.

Possessing the ability to manufacture plutonium pits provides many advantages to the Nation and to NNSA. We are able to exercise and retain the highly skilled workforce of scientists, engineers, and technicians central to a responsive manufacturing capability. Further, we retain the agility necessary to respond to technical or geopolitical issues in a timely manner, allowing us to retain a smaller hedge. The

pit manufacturing and rework capability presents opportunities to take advantage of safety and security advancements to make the stockpile safe, secure, and reliable.

FOUR-YEAR EFFORT

Question. April 2011 was the half way mark of the goal of securing all vulnerable nuclear materials in 4 years.

Is NNSA still on track to achieve this goal in 4 years?

Answer. NNSA is currently on track to complete the objectives outlined in its 4-year effort. NNSA's progress to secure and eliminate nuclear material is described in more detail in the classified "Report to Congress on Securing Vulnerable Nuclear Material" submitted jointly in April 2011 by NNSA and DOD. Although the focused 4-year effort ends in 2013, nuclear security is an enduring responsibility as long as any material exists, and NNSA programs will continue to be guided by the evolving threat environment.

NNSA plays a major role in the international effort to secure the most vulnerable nuclear material around the world in 4 years, working in coordination with DOD, the Department of State, the Nuclear Regulatory Commission (NRC), other elements of the U.S. Government, and international partners. NNSA programs have made significant progress toward achieving key programmatic goals for securing and eliminating weapons-usable nuclear material. NNSA's accomplishments include the following:

—Removed approximately 3,085 kilograms of weapons-usable highly enriched uranium (HEU) and plutonium from countries around the world, including 960 kilograms—enough material for 38 nuclear weapons—since April 2009.

—Completed security upgrades at 32 buildings containing weapons-usable material in Russia and initiated new insider threat upgrades at 15 facilities in Russia since April 2009.

—Completed shipments of spent fuel from Kazakhstan's BN–350 plutonium production reactor to a secure facility in eastern Kazakhstan in 2010. The spent fuel contains enough HEU and weapons-grade plutonium for 775 nuclear weapons.

—Advanced efforts to establish Centers of Excellence (COE) for nuclear security with China, India, Japan and the Republic of Korea, working in coordination with DOD, NRC, and Department of State. The COEs will provide national, regional, and international training and workshops on nuclear security best practices; demonstration of available and effective nuclear security technologies; nuclear security research and development; legal and regulatory frameworks; and bilateral and/or regional nuclear security initiatives.

Question. What specifically does NNSA hope to achieve at the end of those 4 years?

Answer. NNSA has a number of programmatic goals in support of the broader international 4-year effort, including the following:

—Complete the removal of approximately 3,615 kilograms of weapons-usable nuclear material cumulatively from sites around the world by the end of 2013.

—Complete Material Protection Control and Accounting (MPC&A) upgrades at a cumulative total of 229 buildings with Category I nuclear material by the end of fiscal year 2013. However, security upgrades at additional buildings after 2013 may be needed, as U.S. programs are guided by the evolving threat environment.

—Continue working with DOD, NRC, and the State Department to support the establishment of Centers of Excellence for nuclear security with key international partners.

—Contribute to key global initiatives, including the Nuclear Security Summit in 2012, the Global Initiative to Combat Nuclear Terrorism, the implementation of United Nations Security Council Resolution 1540, and the G–8 Global Partnership.

—Lead efforts to implement the fifth revision of the nuclear security recommendations document INFCIRC/225, "The Physical Protection of Nuclear Material and Nuclear Facilities", which will ensure strengthened physical protection of nuclear material and facilities worldwide.

Question. How does NNSA prioritize to determine which nuclear materials in which countries are the most vulnerable and need to be secured first?

Answer. NNSA prioritizes its efforts to secure and eliminate vulnerable nuclear material based on a number of factors, including nuclear material attractiveness (amount and form of the material), the existing site security conditions, the assessed country threat environment, and political opportunity.

Question. What are the most significant challenges in securing the highest-risk materials?

Answer. NNSA works with other countries to minimize the civilian use of HEU, eliminate unneeded weapons-usable nuclear material, and improve security of nuclear material by providing equipment and training. In many cases, getting direct access to facilities to carry out such work can be a challenging process. Sometimes, direct access to facilities is not possible or appropriate, and NNSA works with other elements of the U.S. Government on alternative approaches to improve security of nuclear material such as regional centers of excellence for nuclear security and support for global initiatives.

In addition, these NNSA programs are voluntary in nature, so each country must first agree that it would like to cooperate with NNSA on nonproliferation activities. In some isolated instances, a country has decided that it does not wish to participate. In these instances, NNSA looks to other organizations such as the International Atomic Energy Agency to help facilitate nonproliferation efforts in that country.

MATERIAL CONSOLIDATION

Question. What is NNSA doing to consolidate nuclear materials to a much smaller and easier-to-protect number of sites and buildings, especially in Russia?

Answer. Under the International Nuclear Materials Protection and Cooperation Program (INMP&C), NNSA is continuously promoting the benefits of nuclear material consolidation with its partner countries and especially within the Russian nuclear complex. In May 2010, INMP&C held a Nuclear Material Consolidation Best Practices workshop, with presenters from the NNSA complex and the Rosatom complex to exchange lessons learned regarding the consolidation of nuclear materials. The NNSA, through INMP&C, has also hosted Russian officials, including the head of Rosatom, Sergei Kiriyenko, to tour the Highly Enriched Uranium Materials Facility at Y–12 and discuss the cost savings that will be achieved by conducting this major consolidation effort.

It is standard operating procedure to evaluate intra-site consolidation at every Russian site participating in INMP&C cooperation and to support such consolidation when the sides can identify and agree to an effective approach. INMP&C has supported the removal of all HEU from one Russian site and has significantly reduced the number of buildings requiring protection by supporting the consolidation of nuclear material within sites in Russia. Moreover, INMP&C is currently supporting a large intra-site consolidation activity at one Russian site, and such activities are under consideration with several other Russian sites. In addition, U.S. project teams from INMP&C look for opportunities to transfer excess, nonweapons HEU out of facilities, thereby decreasing the amount of material requiring protection.

The excess HEU transferred from sites is usually downblended into low-enriched uranium (LEU) under INMP&C's Material Consolidation and Conversion (MCC) Project. To date, that project has supported the downblending of almost 14 metric tons of nonweapons HEU to LEU. On a cost-sharing basis with Russia, the MCC Project is also supporting the creation of additional downblending capacity at one Russian site in order to increase the amount of excess nuclear material that can be consolidated and then downblended into LEU. For this activity, Rosatom will fund the additional downblending line, and the MCC Project will support the associated security requirements. This additional capacity is expected to become operational at the end of calendar year 2012. In addition, the MCC Project continues to support the downblending of returned Russian-origin fuel that has been consolidated from the FSU and other countries. The MPC&A management is currently discussing with Rosatom the potential to include additional excess material under the MCC Project, which would remove significant quantities of such material from four sites.

TECHNOLOGICAL SURPRISE

Question. A national security concern is always technological surprise. In particular, the United States needs the best information possible on the nuclear weapons activities of foreign countries.

What has NNSA done to increase our capabilities to monitor the nuclear weapons capabilities of other countries, such as Iran?

Answer. NNSA has a long-standing research and development (R&D) program focused on improving U.S. nuclear security through the development of novel technologies to detect foreign nuclear weapons proliferation/detonation and verification of foreign commitments to treaties and agreements.

Using the unique facilities and scientific skills of the NNSA Nuclear Security Enterprise as well as other DOE National Laboratories, in partnership with industry and academia, the program sponsors R&D to support U.S. nuclear nonproliferation policies and programs by closing technology gaps identified through close interaction with NNSA and other U.S. Government agencies and programs.

Specifically, NNSA provides technical expertise and leadership toward the development of next-generation nuclear detection technologies and methods to detect foreign nuclear materials and weapons production. Through the development of new tools, technologies, and techniques designed for the detection, location, and analysis of global proliferation of nuclear weapons technology with special emphasis on verification technology and transparency measures, NNSA provides the Nation—both unilaterally and multilaterally—with the technical means to monitor foreign nuclear weapons programs.

Question. How confident are you that the United States has the means to detect a nuclear weapons test in another country?

Answer. NNSA, and its predecessor agencies, have more than 50 years of history in developing the leading technologies used by the United States to monitor and verify foreign nuclear testing. Working intimately with the Department of Defense and other U.S. Government agencies, NNSA develops and builds all space-based nuclear detection equipment. This equipment, which continuously monitors the globe, is operated by the U.S. Air Force for the Nation.

Further, NNSA develops other leading-edge technologies, such as seismic sensors and radionuclide and particle collection systems for the detection of a foreign nuclear test. Like the space-based sensors, these ground-based systems are operated by the U.S. Air Force.

Where applicable, and in keeping with the President's nuclear security agenda, NNSA transfers some of these technologies to international nuclear monitoring organizations, such as the International Atomic Energy Agency and Comprehensive Test Ban Treaty Organization.

QUESTIONS SUBMITTED BY SENATOR JON TESTER

Question. Administrator D'Agostino, it's my understanding that the National Nuclear Security Administration (NNSA) shares jurisdiction over fusion energy research with the Department of Energy's Office of Fusion Energy Sciences (OFES). In Montana, the Plasma Physics Group at the University of Montana is currently conducting research with an emphasis on magnetic fusion. The University of Montana Plasma Physics Group and other university programs are researching fusion energy in conjunction with many of our National Laboratories including the Princeton Plasma Physics Laboratory, the Lawrence Livermore National Lab and the National Ignition Facility (NIF). I, and many others, are eagerly awaiting the results of the NIF full ignition tests this year.

In 1980, the Congress passed an authorization bill that envisioned a demonstration fusion power plant by the year 2000. That clearly did not happen. Today, China, South Korea, and many European nations are investing in and advancing fusion energy research, with the hopes of commercialization. Commercialization of fusion energy could assist our Nation in achieving energy independence, and would undoubtedly lead to job creation in whichever nation accomplishes it.

What are the resources in fiscal year 2011 that NNSA is currently providing for the advancement of fusion energy?

Answer. Thermonuclear fusion is pursued at the Department of Energy and NNSA for two important and different purposes. OFES, in the Office of Science, is pursuing fusion science for eventual energy applications.

NNSA pursues Inertial Confinement Fusion (ICF) in support of Stockpile Stewardship. Thermonuclear fusion is the essential process of all U.S. nuclear weapons. Much of SSP inertial confinement fusion research can provide information relevant to inertial fusion energy, so it can be thought of as dual use. NNSA built and operates its large high-energy density facilities to support the stockpile. If successful, ignition on the NIF will demonstrate that ICF in the laboratory is feasible and, as a side-benefit, will be an important advance for fusion energy. Other areas of the ICF program may help develop the fundamental science of inertial fusion energy, including research on direct drive and pulsed power fusion.

NNSA requested $481.5 million in fiscal year 2011 for the ICF Ignition and High Yield Campaign. The ICF fiscal year 2011 budget is $477.6 million. We have requested $476.3 million for fiscal year 2012.

This year NIF is focusing on experimentally optimizing the laser and target conditions as part of the National Ignition Campaign (NIC) and has made significant

progress. We expect to perform full ignition tests in the fiscal year 2012 to 2014 window. NIF is also focusing on material properties under extreme conditions and on finishing up work to validate codes devoted to the energy balance problem.

Question. How much additional funding would NIF require for full commercialization within the current framework?

Answer. When NIF achieves ignition, it will establish the scientific basis for inertial confinement fusion, but will not have the performance required for the energy mission. The NIF was not designed to be converted to a prototype commercial reactor. Significant technical development, independent economical studies, and licensing processes will be required beyond the demonstration of ignition on the NIF for inertial fusion energy. In addition, the demonstration of ignition at NIF does not guarantee that this would be commercially viable.

This year NIF is focusing on experimentally optimizing the laser and target conditions as part of the National Ignition Campaign (NIC) and has made significant progress. We expect to perform full ignition tests in the fiscal year 2012 to 2014 window. NIF is also focusing on material properties under extreme conditions and on finishing up work to validate codes devoted to the energy balance problem.

Several approaches to achieving thermonuclear fusion are being pursued. In NNSA, we are pursuing indirect drive for the first demonstration of ignition on the NIF and polar direct drive as an alternate approach led by the University of Rochester. The Naval Research Laboratory is engaged in direct drive research with an alternate laser driver using a Krypton Flouride laser, and pulsed power fusion research is conducted at Sandia National Laboratories. In the Office of Science, heavy ion fusion, fast ignition, and other approaches are being pursued.

DOE has asked the National Academy of Sciences (NAS) to conduct a review on inertial fusion energy and to make recommendations on how best to pursue inertial fusion energy as a long-range energy option after the demonstration of NIF Ignition. NAS will assess the prospects for generating power using inertial confinement fusion, and will identify scientific and engineering challenges and cost targets. We look forward to receiving the panel's interim report, expected in September 2011.

Question. What are NNSA's goals for fusion energy in fiscal year 2012 and beyond?

Answer. NNSA's goal for the National Ignition Campaign (NIC) is to demonstrate ignition on the NIF. In fiscal year 2012 and beyond, NNSA will work to improve ignition performance and develop advanced ignition concepts and platforms that further its Stockpile Stewardship mission. NNSA will continue to provide peer-reviewed access to it major facilities (NIF, Omega, and Z), which includes work in support of inertial fusion energy as well as basic science. The Department will review the report from NAS on ICF, and use the report's findings to inform our decision on how to proceed with a program in inertial fusion energy.

This year NIF is focusing on experimentally optimizing the laser and target conditions as part of the NIC and has made significant progress. We expect to perform full ignition tests in the fiscal year 2012 to 2014 window. NIF is also focusing on material properties under extreme conditions and on finishing up work to validate codes devoted to the energy balance problem.

Question. Can you detail the collaboration between NNSA and OFES?

Answer. The main mechanism for collaboration between the OFES and NNSA's Inertial Confinement Fusion (ICF) program is the Joint Program in High Energy Density Laboratory Plasmas. High-energy-density laboratory plasma physics is the study of matter at extremely high density and temperature; it is a broad and rapidly growing area of research that includes ICF, laboratory astrophysics, materials properties under extreme conditions, and warm dense matter. Through the joint program, OFES and the ICF programs conduct peer-reviewed solicitations for basic high-energy density research and organize scientific workshops. In fiscal year 2011, the joint program provided support for 50 research awards in more than 30 institutions.

This year NIF is focusing on experimentally optimizing the laser and target conditions as part of the NIC and has made significant progress. We expect to perform full ignition tests in the fiscal year 2012 to 2014 window. NIF is also focusing on material properties under extreme conditions and on finishing up work to validate codes devoted to the energy balance problem.

Question. What is the current backlog of fusion energy related experiments and what can be done to advance them?

Answer. In the near term, NNSA's ICF program will concentrate on achieving ignition in the NIF. This is an essential step for stockpile stewardship, and will also contribute to developing fusion energy. Achieving ignition will be a great technical accomplishment and will establish the scientific feasibility of inertial fusion energy.

The development of inertial fusion energy is not part of NNSA's mission and, as such, no backlog of experiments exists.

This year NIF is focusing on experimentally optimizing the laser and target conditions as part of the NIC and has made significant progress. We expect to perform full ignition tests in the fiscal year 2012 to 2014 window. NIF is also focusing on material properties under extreme conditions and on finishing up work to validate codes devoted to the energy balance problem.

Fusion energy has proven to be a daunting and elusive goal. In support of this goal, however, recently NAS' Committee on Inertial Fusion Energy (IFE) has been asked to:

—Assess the prospects for generating power using inertial confinement fusion;

—Identify scientific and engineering challenges, cost targets, and R&D objectives associated with developing an IFE demonstration plant; and

—Advise DOE on its development of an R&D roadmap aimed at creating a conceptual design for an inertial fusion energy demonstration plant.

The Department will evaluate the recommendations from the subcommittee before deciding how to proceed.

Question. Where does our domestic fusion energy research stand in comparison to China, South Korea, and other nations?

Answer. NNSA is the world leader in inertial confinement fusion research, which we primarily conduct to support Stockpile Stewardship. France and the United Kingdom also have strong programs in inertial confinement fusion to support their nuclear weapons stockpiles. France is building a NIF-scale laser facility named Laser Mega Joule (LMJ). The UK has built a smaller laser facility named Orion. The Japanese conduct research in inertial fusion for energy applications and have a modest-size laser named FIREX I. Germany conducts research in heavy ion fusion. The European Community has proposed the HiPER project to build an inertial fusion energy research program. China is active in high-energy density physics and is building a new large laser system at a Government laboratory. This laser will be smaller than NIF and is not likely to achieve ignition. A number of countries have modest z-pinch pulse power programs for fusion. We are not aware of any substantial ICF program in Korea. Many of the countries mentioned also have significant magnetic energy fusion programs, and the OFES could provide a detailed comparison for those technologies.

This year NIF is focusing on experimentally optimizing the laser and target conditions as part of the NIC and has made significant progress. We expect to perform full ignition tests in the fiscal year 2012 to 2014 window. NIF is also focusing on material properties under extreme conditions and on finishing up work to validate codes devoted to the energy balance problem.

QUESTIONS SUBMITTED BY SENATOR LAMAR ALEXANDER

EXPORT CONTROL REGULATIONS

Question. National Nuclear Security Administration (NNSA) is responsible for implementation of export control regulations under 10 CFR 810 which authorizes transfer of peaceful nuclear technology. The number of specific authorizations issued by Department of Energy under 10 CFR 810 has roughly tripled over the past 5 years and industry has recently noted that the amount of time required for issuing these authorizations has increased significantly as well. These delays have a negative impact on the ability for U.S. firms to compete in the global nuclear marketplace currently estimated to exceed $50 billion per year.

While industry has remarked on the professionalism and dedication of NNSA staff, is the agency sufficiently staffed to respond the increasing number inquiries and authorizations requested?

Answer. Pursuant to section 57b of the Atomic Energy Act, the Secretary of Energy must authorize all U.S. persons who wish to engage directly or indirectly in the production of special nuclear material outside the United States, provided that the assistance is not inimical to the interests of the United States. The Secretary of Energy's authority is nondelegable. The implementing regulation for section 57b of 10 CFR part 810 also requires DOE to address eight specific questions to determine whether proposed assistance raises proliferation concerns. Besides the analysis of the eight specific questions in the regulation, the Department also requests via the State Department, foreign government assurances from the recipient's government that state that the assistance will be for peaceful, nonmilitary purposes, will not be retransferred without U.S. consent, and that the resulting nuclear material

will be under IAEA safeguards. These assurances are consistent with the requirements of section 123 of the Atomic Energy Act and the nuclear suppliers group.

Over the past few years, as the global nuclear industry has seen resurgence in business opportunities, the number of part 810 applications has increased accordingly. In 2007, the Department authorized 1 specific authorization; in 2010, the Department authorized 15. In addition to an increase in the number of applications, the complexity of the applications has also increased as nuclear commerce has become more globalized. Each specific authorization requires approval by the Secretary and must include an in-depth technical and policy analysis addressing the eight questions in the regulation. However, a vast amount of nuclear commerce that takes place with our close trading and nonproliferation partners takes place under general authorization provisions of 10 CFR part 810 and does not require the same intensive analysis by the Department's staff. The Department has recognized the increase in part 810-related activities by U.S. industry and has brought on qualified and experienced staff to help adjudicate these applications. The Department believes that it has the staff in place to address the 810 applications that it currently receives and has plans for streamlining its review processes to enable timelier responses to industry's applications.

Question. If so, why are these delays increasing and what plan does DOE have in place to make the 810 process more efficient?

Answer. One significant reason for the delays has been the lack of prompt government assurances from our foreign partners. Some of the assurances, especially from China and India, have taken more than 18 months to obtain. Without these assurances the Secretary would have been unable to make the legally required noninimicality finding, and the United States would not have been acting in accordance with the nuclear suppliers group guidelines. We are working with the State Department and applicants at the beginning of the part 810 process to identify where potentially long delays may arise. We are also working to structure applications in such a way that will enable us to efficiently and effectively authorize the assistance within the bounds of U.S. law and policy. We have also instituted new policies, such as the "deemed export" process through which we have been able to find ways to satisfy the requirements of the Atomic Energy Act for companies that wish to employ foreign nationals in the United States, thus alleviating one class of applications, which we had been unable to process at all in the past.

Question. If not, what process improvements does DOE plan to put in place to make the 810 process more efficient?

Answer. The Department is also looking at how the nuclear industry does business in a globalized world and is reviewing potential amendments to the part 810 regulation to reflect today's realities. The part 810 regulation has remained essentially the same for more than 25 years. It was designed and implemented at a time in the U.S. nuclear industry's history that is vastly different from how industry works today or will work in the future. We recognize that the part 810 regulations need to be more user-friendly and consistent with current U.S. nonproliferation policies.

NAVAL REACTORS FACILITY, IDAHO NATIONAL LABORATORY

Question. The Naval Reactors Facility (NRF), located at the Idaho National Laboratory (INL), is responsible for fuels and materials research and development, and processing, analyzing, and storing reactor cores that are removed from aircraft carriers or submarines at refueling and decommissioning. NRF's location within the laboratory boundaries enables the Navy to utilize the laboratory's capabilities, such as the Advanced Test Reactor and the Idaho Nuclear Technology and Engineering Center to fulfill mission requirements.

Please describe:

—which non-NNSA facilities at INL are used by the Naval Reactors Program;

—the type of work performed for the program at each facility, and whether it is performed by the Navy or others;

—a comparison of the work at each facility performed by or for the Navy to the work performed by all other users in the aggregate, expressed as a percentage for each facility; and

—whether each facility is essential to the mission of the program.

Answer. Naval reactors uses the following facilities at INL:

Advanced Test Reactor

Naval reactors utilizes Advanced Test Reactor (ATR) for materials research and fuel system development. Naval Reactors Facility (NRF) at INL prepares "test trains" that contain materials destined for irradiation. The NRF ships those test trains to ATR. The ATR personnel receive the test trains, insert them into the reac-

tor, operate the reactor, remove the test trains from the reactor, and ship the test trains back to NRF. The data generated at ATR is needed to support the operational fleet, support reactors currently being designed, and develop fuel and poison systems for future reactors. For example, testing currently underway to support the newly designed, reduced-cost VIRGINIA forward fit (VAFF) core procurement will provide data needed to develop operational limits, casualty procedures, refueling limits, and shipping requirements that ensure safe and efficient operation of our nuclear plants at sea.

In fiscal year 2012, the Naval Nuclear Propulsion Program (NNPP) will provide $64 million to ATR, representing approximately 62 percent of ATR operations.

ATR is essential to the NNPP mission.

Idaho Nuclear Technology and Engineering Center

Some naval spent nuclear fuel is currently stored at Idaho Nuclear Technology and Engineering Center (INTEC). The INTEC personnel are currently preparing that fuel for dry storage, loading it into uniquely designed baskets, loading those baskets into shipping containers, and shipping those containers back to NRF. INTEC is also preparing and shipping naval transuranic waste for disposal at the Waste Isolation Pilot Plant. The INTEC facility is needed to support NNPP commitments to the State of Idaho in the 1995 Settlement Agreement and the 2008 Settlement Addendum. Failure to meet these commitments will potentially prevent NNPP from receiving fuel at NRF, which would prevent NNPP from refueling and defueling nuclear powered warships.

In fiscal year 2012, NNPP will provide $22.3 million of INTEC funding, which represents approximately 21 percent of INTEC operations.

INTEC is essential to the NNPP mission.

Radioactive Waste Management Complex

NNPP disposes of remote-handled low-level radioactive waste (RH–LLW) at Radioactive Waste Management Complex (RWMC). Operations at NRF will continue to produce these wastes indefinitely. NNPP generates approximately one-half of the RH–LLW that is disposed at RWMC. RWMC, and the planned replacement, are essential to the NNPP mission. The RWMC is the only cost-effective disposal path for this waste. Without a disposal path, waste will collect within the ECF water pool and eventually preclude spent-fuel processing operations. Spent-fuel processing is essential to unload shipping containers that support refueling and defueling nuclear warships and meeting NNPP commitments to the State of Idaho in the 1995 Settlement Agreement and the 2008 Settlement Addendum. If RWMC suspended operations, Naval Reactors would be forced to dispose of low-level radioactive waste offsite, at a significantly higher cost.

NNPP will contribute to the construction costs for a planned replacement facility.

The work done at RWMC and the work that will be done at RMWC's replacement is essential to NNPP mission.

Materials and Fuels Complex

NNPP occasionally contracts examination of expended core and ATR test specimens to Materials and Fuels Complex (MFC) when detailed analytical chemistry services are required to obtain the needed data. These examinations require use of the MFC hot cell facilities and analytical chemistry laboratories. These examinations are essential to the NNPP mission. There are other analytical chemistry laboratories (e.g., ORNL) that could perform these examinations; however, shipment costs would be significantly higher. NNPP plans to ship specimens to MFC for analytical chemistry evaluations in 2015. In the future, the NNPP plans to make use of MFC capabilities (currently in development) to perform focused ion beam machining, transmission electron microscopy, and atom probe evaluations of irradiated material. Using MFC capabilities eliminates the need for NNPP to develop these capabilities at NRF or ship the materials for examination offsite.

The percentage of MFC's work that supports naval work varies from year to year.

The work done at MFC is essential to the NNPP mission.

NNPP also subcontracts many site services (e.g., fire department and emergency services) to INL contractors that require use of various INL facilities. The total value of these services is $17 million in fiscal year 2011. In addition to this, in fiscal year 2011, NNPP initiated a permanent annual budget transfer of $1.5 million for security and safeguards at INL. These services are essential to support operations at NRF. If INL were not able to provide these services, the NNPP would need to develop and fund these capabilities independently.

Question. Please describe the effect that suspending operations at the facilities described in question one would have on NRF and the Navy's ability to perform mission work.

Answer. Suspending operations at each of the facilities would have the following impacts:

Advanced Test Reactor.—If ATR suspended operations, Naval reactors would be unable to attain the information required to resolve problems as they arise in the operating fleet, unable to develop or improve future fuel systems and materials applications, and unable to develop the life-of-ship core required for the Ohio Replacement SSBN.

Idaho Nuclear Technology and Engineering Center.—If INTEC suspended operations, Naval reactors would be unable to meet the terms of its agreements with the State of Idaho, placing in jeopardy the ability to refuel and defuel nuclear powered warships.

Radioactive Waste Management Complex.—If RWMC suspended operations, Naval reactors would be forced to dispose of low-level radioactive waste offsite, at a significantly higher cost.

Materials and Fuels Complex.—If MFC suspended operations, Naval reactors would be forced to contract for equivalent examinations offsite at significantly higher costs.

Question. Please describe in detail the amounts and sources (e.g. DOD or DOE) of funding the program contributes for the use of the facilities described in question 1, including any funding or transfers provided for INL's safeguards and security program.

Answer.

[Dollars in millions]

Facility	Fiscal year 2012 funding
ATR	[1] 64.0
INTEC	[2] 22.0
RWMC	[1] 0.8
MFC	
Site services (e.g. mail, EMS, fire)	[3] 17.0
Safeguards and security	[4] 1.5

[1] DOE.
[2] Navy.
[3] DOE fiscal year 2011.
[4] Permanent annual budget transfer.

SMALL MODULAR REACTORS PROGRAM

Question. The Navy has a unique expertise in designing, building, and maintaining modular reactors or use on their vessels, in addition to an impeccable safety record.

Given this expertise, could you describe what role, if any, the Naval Reactors program will (or could) play in DOE's planned Small Modular Reactor program?

Answer. Since 1955, the Naval Nuclear Propulsion Program (NNPP) has provided militarily effective nuclear propulsion plants and ensured their safe, reliable, and long-lived operation. NNPP's reactors are designed to meet requirements associated with their military-unique application, and are not suitable for commercial use. However, there are areas for cooperation and possible technology transfer between NNPP, other Government agencies, and industry. NNPP and the Office of Nuclear Energy will continue to seek opportunities to collaborate and share information with each other and other appropriate parties to the mutual benefit of all organizations.

One example of interagency collaboration occurred in 2009 when NNPP supported the Nuclear Regulatory Commission's (NRC) "Report on Internal Safety Culture". The exchange provided NRC with potential initiatives to increase awareness of and improve the agency's internal safety culture and to identify best practices currently used across the nuclear industry. Specifically, NRC benchmarked NNPP to gather information about practices, programs, and processes that could be considered as best practices. As part of this process, NNPP offered valuable insights and perspective from its extensive knowledge and experience in this crucial area. Similar collaboration with the Small Modular Reactor program may be possible.

As the Small Modular Reactor program moves forward, NNPP and the Office of Nuclear Energy will continue to seek areas to cooperate to the mutual benefit of each organization and taxpayers, while protecting sensitive military technology.

QUESTION SUBMITTED BY SENATOR MITCH MCCONNELL

URANIUM DOWNBLENDING

Question. What is the most current estimate for the amount of down-blended uranium that NNSA plans to down blend in 2012? Are future years' estimates similar in size? What percent of the 10 percent cap does that consume?

Answer. In fiscal year 2012, NNSA's contractors will down blend approximately 8 metric tons of highly enriched uranium (HEU). Because a majority of the resulting low-enriched uranium (LEU) will be retained in two LEU inventories, only the fraction of the material that will be used to compensate the down-blending contractors will enter the market in fiscal year 2012. The estimated net quantity of LEU that will enter the market is equivalent to 281 metric tons of natural uranium, or 1.4 percent of domestic demand for natural uranium (14 percent of the 10 percent guideline). Quantities comparable to those above are expected to prevail for the next couple of years.

SUBCOMMITTEE RECESS

Senator FEINSTEIN. Thank you very much. Mr. D'Agostino, Ms. Harrington, Dr. Cook, and Admiral Donald, thank you very much for your testimony today. I will be talking with you, Mr. D'Agostino. Thank you very much.

This hearing is recessed.

Mr. D'AGOSTINO. Thank you.

Dr. COOK. Thank you very much.

[Whereupon, at 3:35 p.m., Wednesday, May 4, the subcommittee was recessed, to reconvene subject to the call of the Chair.]

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2012

WEDNESDAY, MAY 18, 2011

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

The subcommittee met at 2:41 p.m., in room SD–192, Dirksen Senate Office Building, Hon. Dianne Feinstein (chairman) presiding.

Present: Senators Feinstein, Murray, Tim Johnson, Landrieu, Lautenberg, Alexander, Cochran, McConnell, Collins, Murkowski, and Graham.

DEPARTMENT OF ENERGY

OFFICE OF THE SECRETARY

STATEMENT OF HON. STEVEN CHU, SECRETARY

OPENING STATEMENT OF SENATOR DIANNE FEINSTEIN

Senator FEINSTEIN. Good afternoon, ladies and gentlemen, and welcome to the Energy and Water Subcommittee's budget hearing on the Department of Energy's (DOE) fiscal year 2012 budget request.

DOE has requested $30.5 billion for fiscal year 2012. That is an increase of $4.8 billion, or 19 percent, from fiscal year 2011. About $1.1 billion of the $4.8 billion increase, or 25 percent, is for the National Nuclear Security Administration's (NNSA) nuclear weapons for nonproliferation and Naval Reactor programs.

This subcommittee has already explored NNSA's budget with Administrator D'Agostino 2 weeks ago. The rest of the increase is for energy efficiency and renewable energy projects, loan guarantees, and basic energy research.

It is my understanding that DOE submitted this budget request before the Congress passed the 2011 continuing resolution, and so it does not reflect the new spending reality. So, it is clear that DOE and the Congress will have to make some joint, painful decisions and focus the limited resources that we have on the highest priorities. Therefore, I think knowing your highest priorities is of substantial importance to us, Secretary. I hope that you will highlight those. Do not feel shy.

I would like to just highlight the three largest increases in this budget.

VerDate Nov 24 2008 17:29 Dec 28, 2012 Jkt 064597 PO 00494 Frm 00131 Fmt 6601 Sfmt 6601 U:\2012HEAR\10HEAR\10MY18DOE.TXT 64597

The largest single increase would be for the Office of Energy Efficiency and Renewable Energy (EERE), which would see an increase of $1.4 billion or 76 percent. The only programs in this account that see a decrease are hydrogen and water power, and I know we want to discuss that.

Given the across-the-board budget increases for all other programs, it is hard to determine which of these research and development (R&D) programs would have the biggest impact on energy use and the clean-energy economy.

Second, the Office of Science would see an increase of $5.5 million or 11 percent. So, those are the first two, EERE and Office of Science.

Innovation clearly drives economic prosperity. The Office of Science has been one of the leaders in new scientific and technologies deliveries. For example, Argonne National Lab in Illinois spent 10 years researching cathode materials for a lithium ion battery that was small, energy efficient, and low in weight. General Motors used this technology to develop the battery it now uses in the Chevy Volt, the first mass produced plug in hybrid electric vehicle. So, that is significant.

Despite these successes, the Office of Science must do a better job explaining how basic research can lead to new clean-energy technologies, and how it can better leverage large scientific facilities to help American industry remain competitive. I mean, I would hazard a guess that that would be a substantial priority for all of us.

Third, Advanced Research Projects Agency-Energy (ARPA–E) would see an increase of $370 million or 206 percent. ARPA–E, of course, holds a promise of advancing high-risk, high-reward technology.

Even though ARPA–E is a new agency, I would like to ask that you apply ARPA–E program management to other DOE offices, such as the rigorous peer review process and contract or grant negotiations completed in just a few months. Streamlining contracting processes and assembling high-quality program management teams, I think, would benefit many DOE energy programs.

My last observation is that outside of NNSA, DOE's budget does not provide a 5-year spending plan. Without this plan, it makes it difficult to buy into committing to programs that create large, out-year obligations.

Joining us today is, of course, Dr. Steven Chu, the Secretary of Energy. In the full disclosure, I want to say that I have the greatest respect and fondness for Secretary Chu. I happened to meet him when he was head of Lawrence Berkley Labs, and his achievements are many, marked, and quite astounding. So, we all grant that you are a most brilliant secretary, Secretary Chu, and we are delighted to have you here.

But let me turn to Senator Alexander for his remarks, if I might.

OPENING STATEMENT OF SENATOR LAMAR ALEXANDER

Senator ALEXANDER. Thank you, Madam Chairman.

When I was the Education Secretary and was in your shoes, I did not get that kind of compliment from the chairman of the subcommittee, so I am a little jealous.

But, you know, I agree with her. I think, Dr. Chu, you are one of the President's best appointees, that you have been a terrific leader, and I am glad that you are spending this part of your life in this form of public service.

I want to, in my remarks and then in the questions when my time comes, I want to focus on some of the things that Senator Feinstein talked about. And, for me, I would say it would be putting a priority on energy research for our country, something I know, Dr. Chu, you have long advocated.

In 2008, I went to the Oak Ridge National Laboratory and gave a talk called "A New Manhattan Project for Clean Energy Independence", and suggested that we apply the same rigor and ambitious goals to energy research that we did to the Manhattan Project in World War II, and listed several objectives of such a new Manhattan Project, most of them taken from The 14 Grand Challenges of Engineering in the 21st Century that Chuck Vest and the National Academy of Engineering had said. But they included plug in electric cars, carbon capture, solar power and recycling, used nuclear fuel, advanced bio fuels, green buildings, and even fusion.

Now, you were a part, Dr. Chu, of the National Academy's effort to say to the Congress what we should do to help our country be more competitive. We called it "America Competes" based upon your report. And you have moved to form hubs, you call them, in several areas, and in your request, you want to form more. So, I would like to indicate my broad agreement with that sort of strategy and work with you to find ways, even in this tight budget situation, to find—to prioritize spending and to find more money for clean-energy research.

For example, my colleagues have wanted to talk this week about subsidies for energy for big oil. If we are going to do that, I think we should talk about all subsidies. I suggested on the floor this morning we might talk about big wind. The taxpayers are on the hook for $27 billion over the next 10 years to subsidize windmills, which is more money than we would save if we cut out the tax breaks for the five big oil companies. That is just an example. And I am—that was based upon the production tax credit that was put into place temporarily in 1992.

Now, my staff research indicates we only use about—spend about $6 billion on energy research in our Federal Government every year, and I would wonder whether some of these long-term subsidies for energy, whether big oil or big wind, might be better spent for energy research.

There are other parts of the budget, even this budget, where I wonder whether the energy efficiency section, I wonder if energy efficiency money should go up at the level that it is mentioned here, or we should increase the research budget. There is $4 billion in unspent American Recovery and Reinvestment Act (ARRA) funding and weatherization and State energy grants. You're seeking $384 million more. Would that not be better spent to take the Federal research budget up closer to $7, $8, or $9 billion a year?

I, too, like ARPA–E. I think that is a very promising area. We were only able to find $180 million for it this year, although it is authorized at $300 million, and it is now fully authorized.

So, I would just—I would like to weigh in favor of energy research. I think many of my Republican colleagues see energy research as an appropriate role for the Federal Government. Long-term subsidies some of my Republican colleagues have problems with. I deal with long term. Short-term, I support jump starting electric cars, maybe natural gas trucks, jump starting the first new nuclear plants through loan guarantees. All these are things that you have suggested.

But, so I will be looking to work with you on seeing if we can prioritize money from the current request, maybe look at these long-term subsidies, and apply more our dollars over the next 10 years to what you call hubs and I call a new Manhattan Project for clean-energy independence.

Thank you, Madam Chairman.

Senator FEINSTEIN. And I thank you, Senator Alexander.

We will proceed in 5-minute rounds and use the early bird rule straight as people come in to attend. And so, Secretary Chu, why do you not proceed with your remarks, and then we will go to questions.

SUMMARY STATEMENT OF STEVEN CHU

Secretary CHU. Thank you, Chairman Feinstein, and thank you, Ranking Member Alexander, and the other members of the subcommittee, first, for your kind remarks, and—but also for giving me the opportunity to present and discuss the President's fiscal year 2012 budget request for DOE.

President Obama has a plan for the United States to win the future by out-innovating, out-educating, and out-building the rest of the world, while at the same addressing the deficit. Many countries are moving aggressively to lead in clean energy. We must rev up the great American innovation machine to create jobs and win this clean-energy race.

And to that end, President Obama has called for increased investments in clean-energy research, development, and deployment. In addition, he has proposed a bold, but achievable, goal of generating 80 percent of America's electricity from clean sources by 2035. DOE's fiscal year 2012 budget request of $29.5 billion supports these goals and strengthens the Nation's economy and security.

We recognize that families are feeling the effects of high gas prices right now, and while there are no silver bullets to this challenge, President Obama is committed to breaking our dependence on foreign oil and easing the burdens on families. This budget helps reduce our reliance on oil by developing the next generation of home grown bio fuels and by accelerating electric vehicle research, development, and deployment. And through energy efficiency programs, we will save money for consumers by saving energy.

In addition, the budget supports the research, development, and deployment of renewable energy, the modernization of the electric grid, and advancement of carbon capture and sequestration technologies. The budget also supports loan guarantees for renewable and energy efficiency technologies. Nuclear energy has an important role to play in our energy portfolio, and that is why the budget

requests additional loan guarantee authority and invests in the research and development of advanced nuclear technologies.

To unleash innovation, the President's budget supports the groundbreaking research through DOE's Office of Science. For example, we are investing in basic energy sciences, advanced scientific computing, biological and environmental science, and all key areas for economic competitiveness. In addition, the Office of Science supports widely used facilities that provide unique analysis tools for materials, chemistry, and biology research.

The budget invests $515 million in ARPA–E, and this will allow ARPA–E to continue to support research projects that aim to deliver game-changing clean-energy technologies. ARPA–E's projects are generating excitement in the private sector.

For example, through a combined total of $24 million from ARPA–E, six companies have already been able to advance their research efforts and show the potential viability of their cutting-edge technologies. This early support enabled those companies to achieve R&D milestones that, in turn, have attracted more than $100 million in private sector funds to the projects. This is precisely the innovation leverage that is needed to win the future.

Another key piece of our research effort is the energy innovation hubs. Through the hubs, we are bringing together top scientists and engineers to achieve similar game-changing energy goals, but where a concentrated effort over a longer time horizon is needed to establish innovation leadership. The budget requests $146 million to support the three existing hubs and to establish three new hubs in the areas of batteries and energy storage, smart grid technologies and systems, and critical materials.

Finally, the budget supports the Energy Frontier Research Centers (EFRC), which are working to solve specific scientific problems that are blocking clean-energy development. To better integrate and maximize our research efforts, DOE is organizing along the lines of business. This will help us create a sum that is worth more than the parts.

In any specific technological area, we are examining current business projections and looking across ARPA–E, the Office of Science, and our applied technology side to determine where we in DOE can add the most value to accelerate the pace of innovation.

For example, we have instituted a SunShot Initiative with participation from ARPA–E, Office of Science, and EERE to make the solar energy cost competitive with any other form of energy before the end of this decade. And this would position the United States to lead in this growing industry.

At a time when industry, the Congress, and the American people are making critical energy decisions, we need to make sure to adequately fund the Energy Information Administration (EIA), the Nation's premier source of independent statistical information about energy production and use. Even a modest increase to support the EIA will go a long way in providing the Congress and others with an unbiased data and analysis needed to make informed decisions.

In addition to strengthening our economy, the budget also strengthens our security by providing $11.8 billion for DOE's NNSA. The request of $7.6 billion for weapons activities provides

a strong basis for transitioning to a smaller, yet still safe, secure, and effective nuclear stockpile without additional nuclear testing.

It also provides much needed resources to strengthen science, technology, and engineering capabilities, and to modernize the physical infrastructure of our nuclear security enterprise.

To support the President's goal of securing all vulnerable nuclear material around the world in 4 years, the budget invests $2.5 billion in the Defense Nuclear Nonproliferation program. Through our investments, the Obama administration is laying the groundwork for the Nation's future prosperity and security. At the same time, we are mindful of our responsibility to the taxpayer. We are streamlining operations and cutting back in multiple areas, including eliminating unnecessary fossil fuel subsidies.

PREPARED STATEMENT

The United States faces a choice: Will we lead in innovation or will we fall behind? To lead the world in clean energy, we must act now, and we cannot afford not to.

Thank you and I am pleased to now answer your questions.

[The statement follows:]

PREPARED STATEMENT OF STEVEN CHU

Chairman Feinstein, Ranking Member Alexander, and members of the subcommittee, thank you for the opportunity to appear before you today to discuss the President's fiscal year 2012 budget request for the Department of Energy (DOE).

In his State of the Union Address, President Obama laid out a plan for the United States to win the future by out-innovating, out-educating, and out-building the rest of the world, while at the same time addressing the deficit. The President's budget request invests in much-needed programs while cutting back where we can afford to.

Many countries are moving aggressively to develop and deploy the clean-energy technologies that the world will demand in the coming years and decades. As the President said, this is our generation's "Sputnik moment".

We must rev up the great American innovation machine to win the clean-energy race and secure our future prosperity. To that end, President Obama has called for increased investments in clean-energy research, development, and deployment. In addition, he has proposed a bold, but achievable goal of generating 80 percent of America's electricity from clean sources by 2035.

A clean-energy standard will provide a clear, long-term signal to industry to bring capital off the sidelines and into the clean-energy sector. It will grow the domestic market for clean sources of energy—creating jobs, driving innovation, and enhancing national security. And by drawing on a wide range of energy sources including renewables, nuclear, clean coal and natural gas, it will give utilities the flexibility they need to meet our clean-energy goal while protecting consumers in every region of the country.

DOE's fiscal year 2012 budget request of $29.5 billion supports these goals and strengthens the Nation's economy and security by investing in the following priorities:

—Supporting groundbreaking basic science, research, and innovation to solve our energy challenges and ensure that the United States remains at the forefront of science and technology;

—Leading in the development and deployment of clean and efficient energy technologies to reduce our dependence on oil, accelerate the transition to a clean-energy economy, and promote economic competitiveness; and

—Strengthening national security by reducing nuclear dangers, maintaining a safe, secure and effective nuclear deterrent, and cleaning up our cold war nuclear legacy.

While we are investing in areas that are critical to our future, we are also rooting out programs that aren't needed and making hard choices to tighten our belt. Additionally, we are improving our management and operations so we function more efficiently and effectively.

LEADING IN THE GLOBAL CLEAN-ENERGY ECONOMY

As the President said in his State of the Union Address, investing in clean-energy will strengthen our security, protect our planet, and create countless new jobs here at home. DOE's budget request invests $3.2 billion in energy efficiency and renewable energy programs.

Through programs to make homes and buildings more energy efficient, including a new "Better Buildings Initiative" to make commercial buildings 20 percent more efficient over the next decade, we will save money for families and businesses by saving energy. That is money that can be re-invested back into the economy. In addition, the budget supports the research, development, and deployment (RD&D) of renewable sources of energy like wind, solar, and geothermal. It supports the modernization of the electric grid and the advancement of carbon capture and sequestration technologies. And it helps reduce our dependence on oil by developing the next generation of biofuels and accelerating electric vehicle research and deployment to support the President's goal of putting 1 million electric vehicles on the road by 2015. This includes a $200 million competitive program to encourage communities to invest in electric vehicle infrastructure.

We're also focused on moving clean-energy technologies from the lab to the marketplace. Over the past 2 years, DOE's loan programs have supported more than $30 billion in loans, loan guarantees, and conditional commitments to guarantee loans for 28 clean-energy and enhanced automotive fuel efficiency projects across the country, which the companies estimate will create or save more than 61,000 jobs. Building on this success, we are requesting new credit subsidy that will support approximately $1 to $2 billion in loan guarantees for innovative renewable energy and energy efficiency technologies. These deployment efforts build on the substantial investment made in the clean-energy sector by the American Recovery and Reinvestment Act (ARRA), and are supplemented by tax incentives that have also played an important role in bringing clean-energy projects to market, such as the 48C manufacturing tax credits and the 1603 cash grants in lieu of investment tax credits, which the 2012 budget also expands. We are also requesting $100 million in credit subsidy for a new "Better Buildings Pilot Loan Guarantee Initiative for Universities, Schools, and Hospitals", which will guarantee up to $2 billion in loans to support energy efficient retrofits.

Nuclear energy also has an important role to play in our energy portfolio. To jumpstart the domestic nuclear industry, the budget requests up to $36 billion in loan guarantee authority. It also invests in the research and development (R&D) of advanced nuclear technologies, including small modular reactors (SMR).

SUPPORTING GROUNDBREAKING SCIENCE

To spur innovation, the President's budget request invests in basic and applied research and keeps us on the path to doubling funding for key science agencies, including DOE's Office of Science. As Norm Augustine, former chairman of Lockheed Martin and former Under Secretary of the Army, has said, underfunding R&D in a time of austerity is like removing the engine of an aircraft to reduce its weight.

That is why the budget request increases support for DOE's comprehensive research strategy to accelerate energy breakthroughs.

Through $5.4 billion for the Office of Science, we're expanding our investment in basic energy sciences, advanced scientific computing, and biological and environmental sciences—all key areas for our future economic competitiveness.

The budget invests $550 million in the Advanced Research Projects Agency-Energy, (ARPA–E). The administration also seeks an additional $100 million for ARPA–E from the Wireless Innovation Fund to support wireless clean-energy technologies. This investment will allow ARPA–E to continue the promising early stage research projects that aim to deliver game-changing clean-energy technologies. ARPA–E's projects are generating excitement both in DOE and in the private sector. For example, through a combined total of $24 million from ARPA–E, six companies have been able to advance their research efforts and show the potential viability of their cutting-edge technologies. This extremely valuable early support enabled those companies to achieve R&D milestones that, in turn, have attracted more than $100 million in private sector funds to the projects. This is precisely the innovation leverage that is needed to win the future.

Another key piece of our research effort is the Energy Innovation Hubs. Through the Hubs, we are bringing together our Nation's top scientists and engineers to achieve similar game-changing energy goals, but where a concentrated effort over a longer time horizon is needed to establish innovation leadership. DOE has established three Energy Innovation Hubs in the areas of energy efficient buildings, modeling, and simulation for nuclear reactors, and fuels from sunlight. The budget re-

quests $146 million to support the three existing Hubs and to establish three new Hubs in the areas of batteries and energy storage, smart grid technologies and systems, and critical materials. The Energy Innovation Hubs were modeled after DOE's BioEnergy Institutes, which have established an outstanding 3-year track record.

Finally, the budget continues to support the Energy Frontier Research Centers (EFRCs), which are mostly university-led teams working to solve specific scientific problems that are blocking clean-energy development.

The Energy Innovation Hubs, ARPA–E, and EFRCs represent three complementary approaches to advance groundbreaking discovery. When you think of the EFRCs, think about a collaborative team of scientists such as Watson and Crick unlocking the secrets of DNA. When you think of ARPA–E, think about visionary risk-takers launching new technologies and start-up companies out of their garages. When you think of the Hubs, think of large, mission-oriented research efforts such as the Manhattan Project, the development of radar at MIT's Radiation Laboratory during World War II and the research in America's great industrial laboratories in their heyday.

We don't know where the big energy breakthroughs are going to come from. To reach our energy goals, we must take a portfolio approach to R&D: pursuing several research strategies that have proven to be successful in the past. But I want to be clear—this is not a "kitchen sink" approach. This work is being coordinated and prioritized, with a 360-degree view of how these pieces fit together. Taken together, these initiatives will help America lead in science and technology innovation.

NUCLEAR SAFETY AND SECURITY

In addition to strengthening our economy, the budget request also strengthens our security by providing $11.8 billion for DOE's National Nuclear Security Administration (NNSA). The 5-year fiscal year 2012 to fiscal year 2016 request of nearly $65 billion for NNSA reflects the President's nuclear security priorities, as well as his commitment to modernize the U.S. nuclear weapons enterprise and sustain a strong nuclear deterrent for the duration of the New Strategic Arms Reduction Treaty (New START) and beyond.

The request of $7.6 billion for weapons activities provides a strong basis for transitioning to a smaller yet still safe, secure and effective nuclear stockpile without additional nuclear testing. It also provides much-needed resources to strengthen science, technology, and engineering capabilities and to modernize the physical infrastructure of our nuclear security enterprise.

The President has identified the danger of terrorists getting their hands on nuclear weapons or the material to build them as the greatest threat to global security. To support the President's goal of securing all vulnerable nuclear material around the world in 4 years, the budget invests $2.5 billion in the NNSA Defense Nuclear Nonproliferation program. This is part of a 5-year, $14.2 billion commitment for the program.

The budget also requests $1.2 billion to support the Navy's nuclear powered submarines and aircraft carriers. And it provides $6.1 billion to protect public health and safety by cleaning up the Nation's cold war nuclear legacy.

FISCAL RESPONSIBILITY

Through our investments, we are laying the groundwork for the Nation's future prosperity and security. At the same time, we are mindful of our responsibility to the taxpayer.

We are cutting back in multiple areas, including eliminating unnecessary fossil fuel subsidies, reducing funding for the fossil energy program and reducing funding for the hydrogen technology program. We're streamlining operations to reduce administrative costs. And we're making some painful cuts, including ending operation of the Tevatron accelerator and freezing salaries and bonuses for hard-working National Laboratory, site and facility management contractor employees.

Finally, we continue to make progress on a management excellence agenda to improve our operations.

HIGHLIGHTS OF THE FISCAL YEAR 2012 BUDGET REQUEST

In his State of the Union Address, President Obama said that America faces "our generation's Sputnik moment" and that we need to out-innovate, out-educate, and out-build the rest of the world to capture the jobs of the 21st century. "In America, innovation doesn't just change our lives. It's how we make our living." Through innovation in promising areas like clean energy, the United States will win the future and create new industries and new jobs. To lead in the global clean-energy economy, we must mobilize America's innovation machine in order to bring technologies from

the laboratory to the marketplace. DOE is on the front lines of this effort. To succeed, DOE will pursue game-changing breakthroughs, invest in innovative technologies, and demonstrate commercially viable solutions.

In addition to energy advances that spark economic growth, national security remains fundamental to the Department's mission. Through bipartisan ratification of the New START treaty with Russia, America, and its global partners are leading by example in implementing the focused expansion of domestic and international activities to reduce the threat of nuclear weapons, nuclear proliferation, and unsecured or excess weapons-usable materials. The NNSA supports the international effort to secure all vulnerable nuclear materials around the world within 4 years. The NNSA also fulfills the President's commitment to modernize the Nation's nuclear stockpile until a world without nuclear weapons can be realized.

DOE's fiscal year 2012 budget request is $29.5 billion, an 11.8 percent or $3.1 billion increase from fiscal year 2010 current appropriation levels. The fiscal year 2012 request supports the President's goals to increase America's competitiveness by making strategic investments in our Nation's clean-energy infrastructure and to strengthen our national security by reducing the global threat of nuclear materials. The President has called for advancing research on clean-energy technologies and manufacturing, doubling the share of electricity generated from clean-energy supplies by 2035, and putting 1 million electric vehicles on the road by 2015. DOE's request prepares for a multi-year effort to address these interconnected objectives and prioritizes R&D of renewable energy technologies to expand sustainable energy options for the United States.

The fiscal year 2012 budget builds on the intense planning, execution, and oversight of the $35.2 billion from ARRA. By the end of fiscal year 2010, DOE successfully obligated $32.7 billion of ARRA funds, including all funding that was set to expire. In developing the fiscal year 2012 budget request, the DOD has taken these investments into account and will oversee execution of these funds with value to the taxpayer in mind. ARRA investments are focused on:

—energy conservation and renewable energy sources ($16.8 billion);
—environmental cleanup ($6 billion);
—loan guarantees for renewable energy and electric power transmission projects ($2.4 billion);
—grid modernization ($4.5 billion);
—carbon capture and sequestration ($3.4 billion);
—basic science research ($1.6 billion); and
—the ARPA–E ($0.4 billion).

DOE's ARRA activities are strengthening the economy by providing much-needed investment, saving or creating tens of thousands of jobs, cutting carbon pollution, and reducing U.S. dependence on oil.

The President's fiscal year 2012 budget supports three strategic priorities:

Transformational Energy.—Accelerate the transformation to a clean-energy economy and secure U.S. leadership in clean-energy technologies.

Economic Prosperity.—Strengthen U.S. science and engineering efforts to serve as a cornerstone of our economic prosperity and lead through energy efficiency and secure forms of energy.

Nuclear Security.—Enhance nuclear security through defense, nonproliferation, naval reactors, and environmental clean-up efforts.

As the President has articulated, innovation is essential to America's economic competitiveness. To meet the challenge of "our generation's Sputnik moment", DOE supports a coordinated strategy for research and development across all of its programs. With every initiative DOE undertakes, sound science is at the core. In fiscal year 2012, we will increasingly emphasize cross-cutting initiatives to link science throughout DOE, specifically with energy and national security programs in order to deliver results to the American taxpayer. In the Office of Science, the Department requests $5.4 billion, a 9.1 percent or $452 million increase more than the fiscal year 2010 current appropriation levels, to support an elevated focus on the advancement of the United States' leadership in fundamental research. ARPA–E is building on established gains since its initial funding in fiscal year 2009 through the ARRA to perform transformational research and create game-changing breakthroughs for eventual market adoption. The fiscal year 2012 budget request includes $550 million for ARPA–E to sustain investment in new energy technologies.

Energy Innovation Hubs play a key role in solving specific energy challenges by convening and focusing top scientific and engineering talent to focus on those problems. The Hubs bring together multidisciplinary teams of researchers in an effort to speed research and shorten the path from scientific discovery to technological development and commercial deployment of highly promising energy-related technologies. DOE is proposing to double its commitment to this research approach by

requesting three new Hubs to focus on batteries and energy storage, critical materials, and Smart Grid technologies and systems. DOE will continue funding the three Energy Innovation Hubs introduced in fiscal year 2010 to focus on developing fuels that can be produced directly from sunlight, improving energy efficient building systems design, and using modeling and simulation tools to create a virtual model of an operating advanced nuclear reactor. Complementing the Hubs, DOE plans in fiscal year 2012 to continue coordination with the Office of Science's EFRCs, which exemplify the pursuits of broad-based science challenges for energy applications.

Energy Security—Promoting America's Energy Security Through Reliable, Clean, and Affordable Energy

In his State of the Union Address, the President outlined clearly to the American people his roadmap for transforming our Nation's energy economy to meet the demands of future generations. "Instead of subsidizing yesterday's energy, let's invest in tomorrow's", he said. To meet the President's challenge, DOE must recruit the sharpest research minds and build on its aggressive discovery agenda across all programs to achieve breakthroughs on the most-pressing energy challenges facing the United States.

In his address, President Obama laid out a goal for clean-energy sources to account for 80 percent of America's electricity by 2035. In fiscal year 2012, DOE requests funds to help achieve this Presidential objective and address many of the energy delivery challenges facing American families and energy providers.

Applied Research, Development, and Deployment.—Meeting the President's goal of making America the first country to have 1 million electric vehicles on the road by 2015, DOE will research cost-competitive methods to develop electric vehicles, increase the adaptability and capacity of the grid to enable vehicle charging, incentivize communities to invest in electric vehicles and infrastructure and send these vehicles to the Nation's roadways. DOE will also launch competitive manufacturing research for breakthrough technologies in energy efficiency diagnostics and retrofits to help business owners around the country save money on energy costs.

Loan Guarantees.—The Loan Programs Office (LPO) is a vital tool for promoting innovation in the energy sector across a broad portfolio of clean and efficient energy technologies. In fiscal year 2012, DOE is requesting credit subsidies to support approximately $1 to $2 billion in loan guarantees for renewable energy deployment and up to $36 billion in additional authority to loan guarantees for nuclear power projects. DOE will also continue to streamline and prioritize the issuance of loan guarantees to leverage private sector investment in clean-energy and energy efficiency projects that will save and create jobs.

Better Buildings Initiative.—Last year, commercial buildings consumed roughly 20 percent of all energy in the U.S. economy. Improving energy efficiency in our buildings can create jobs, save money, reduce our dependence on oil, and make our air cleaner. The President's Better Buildings Initiative will make commercial buildings 20 percent more energy efficient over the next decade through initiatives that include:

—re-designing the current tax deduction for commercial buildings and upgrades to a credit that is more generous and that will encourage building owners and real estate investment trusts (REITs) to retrofit their properties;

—improving financing opportunities for retrofits through programs including a new Better Buildings Pilot Loan Guarantee Initiative for Universities, Schools and Hospitals, for which DOE requests $100 million in credit subsidy to guarantee up to $2 billion in loans for energy efficiency retrofits for these facilities;

—creating a $100 million Race to Green competitive grant program for State and municipal governments to implement innovative approaches to building codes, performance standards, and regulations so that commercial building efficiency will become the norm in communities across the country; and

—calling on CEOs and university presidents to join DOE and other Federal partners in a Better Buildings Challenge to make their organizations leaders in saving energy.

The Better Buildings Initiative builds on our investments through ARRA and our continued commitment to passing "HOMESTAR" legislation to encourage American families to make energy saving upgrades in their homes.

Electricity Reliability and Energy Management.—Reliable, affordable, efficient, and secure electric power is vital to expanding economic recovery, protecting critical infrastructures, and enabling the transition to renewable energy sources. The fiscal year 2012 request invests $238 million to bring the next generation of grid modernization technologies closer to deployment and commercialization, to assist States and regional partners in grid modernization efforts, and to facilitate recovery from

energy supply disruptions when they occur. The request includes a new Smart Grid Technology and Systems Hub that will address the total electricity system, covering applied science, technology, economic, and policy issues that affect our ability to modernize the grid. The fiscal year 2012 request also plans an expansion of the Home Energy Score program that provides homeowners with information on how their homes can be more energy efficient and guidance for saving on home energy costs. This is in addition to the President's support for passage of the HOMESTAR rebate program in 2011.

Investing in energy efficiency, renewable energy generation, and grid modernization are fundamental steps necessary for creating a clean-energy economy. We must also invest in the improvement of existing sources of energy that will provide a bridge between current and future technologies. These technologies are already a major segment of the energy mix and will play a critical role in providing a solid foundation that will make possible the creation of a new energy economy.

Leadership in Nuclear Energy.—Nuclear energy currently supplies approximately 20 percent of the Nation's electricity and 70 percent of the Nation's clean, noncarbon electricity. The request for the Office of Nuclear Energy includes $380 million for R&D, in addition to key investments in supportive infrastructure. In addition, DOE is engaging in cost-shared activities with industry that may help accelerate commercial deployment of SMRs. The request includes funding for cost-shared design certification and licensing activities for SMRs, the deployment of which holds promise for vastly increasing the generation of clean energy on a cost competitive basis. DOE will also promote nuclear power through the Loan Guarantee program, which is requesting up to $36 billion in additional loan guarantee authority in fiscal year 2012.

Advanced Fossil Energy—Experience in Carbon Capture and Storage.—The world will continue to rely on coal-fired electrical generation to meet energy demand. It is imperative that the United States develop the technology to ensure that base-load electricity generation is as clean and reliable as possible. The Office of Fossil Energy requests $452.9 million for R&D of advanced coal-fueled power systems and carbon capture and storage technologies. The budget focuses resources within the fossil energy program on activities that can reduce carbon pollution and have potential benefits for both the existing fleet and new power plants—specifically, postcombustion capture R&D and geologic carbon storage R&D.

Ending Tax Subsidies to Fossil Fuel Producers.—In accordance with the President's agreement at the G–20 Summit in Pittsburgh to phase out subsidies for fossil fuels so that we can transition to a 21st century energy economy, the administration proposes to repeal a number of tax preferences available for fossil fuels. Tax subsidies proposed for repeal include, but are not limited to:

—the credit for oil and gas produced from marginal wells;

—the deduction for costs paid or incurred for any tertiary injectant used as part of a tertiary oil recovery method; the ability to claim the domestic manufacturing deduction against income derived from the production of oil and gas and coal; and

—expensing the exploration and development costs for coal.

Improving Energy Information.—Because of the central connection between energy and the U.S. economy, the Nation's leaders, energy markets, producers, manufacturers and consumers need reliable, timely, impartial, and transparent information, and analyses. Such information enhances the debate over energy utilization strategies, the development of alternative energy sources, and investment decisions, and is essential during times of energy "shocks". The EIA requests $124 million to update its energy data collection and analysis programs to reflect the current industry composition and operation in order to continue to provide a comprehensive picture of energy markets and industry as a whole. The request places a special emphasis on providing better data on energy consumption in homes, commercial buildings, and manufacturing establishments to enable EIA to maintain the high-quality of the information needed to inform decisions by the private sector, by Government policymakers, and by households.

Economic Security—Sharpening America's Competitive Edge Through a Clean-Energy Economy

To meet "our generation's Sputnik moment" and promote economic competitiveness, the United States must demonstrate leadership in clean-energy technologies. "We'll invest in biomedical research, information technology and especially clean-energy technology—an investment that will strengthen our security, protect our planet, and create countless new jobs for our people", said President Obama before the Congress in the State of the Union Address. President Obama outlined his comprehensive vision to lead our Nation's clean-energy economy and provide economic security to Americans. As the administration seeks to reduce Federal Government

spending, DOE recognizes its role and has tightened its expenditures in several areas such as oil and natural gas. The fiscal year 2012 budget request acknowledges DOE's missions to achieve these imperative goals while setting forth a clean-energy economy for entrepreneurs and manufacturers to reclaim their competitive edge in clean-energy innovation.

DOE plans to promote economic security by building on the progress made through the more than $32 billion in grants and contracts under ARRA, which made historic investments in the Nation's economy and has put the country on target to double renewable energy generation by 2012. ARRA helped create tens of thousands of jobs and, combined with the fiscal year 2012 request, will help DOE accelerate the transition of our Nation to a clean-energy economy.

The President's fiscal year 2012 budget supports the plan to rebuild our economy through clean-energy research and development by:

Expanding ARPA–E To Spur Innovation.—The President's request proposes $550 million for the ARPA–E program, plus an additional $100 million for the program from the Wireless Innovation and Infrastructure initiative for a total of $650 million. ARPA–E performs transformational and cutting-edge energy research with real-world applications in areas ranging from grid technology and power electronics to batteries and energy storage. The budget also supports programs with significant promise to provide reliable, sustainable energy across the country, such as the SunShot initiative aimed at making solar energy cost competitive. With focused investment in manufacturing innovation and industrial technical efficiencies, the President's proposal will move private sector capital off the shelves and into the marketplace.

Targeting Investments for Future Economic Growth.—To secure a competitive advantage in high-tech industries and maintain international leadership in scientific computing, we will invest in core research activities for energy technologies, the development of general biological design principles and new synthetic molecular toolkits to improve understanding of natural systems, and core research activities to advance the frontiers of high-performance computing. Underlying these investments in research is the education and training of thousands of scientists and engineers who contribute to the skilled scientific workforce needed for a 21st century innovation economy.

Doubling the Number of Energy Innovation Hubs To Solve Key Challenges.—Innovation breakthroughs occur when scientists collaborate on focused problems. The fiscal year 2012 budget request proposes three new Energy Innovation Hubs that will bring top American scientists to work in teams on critical energy challenges in areas such as critical materials, batteries and energy storage, and Smart Grid technologies. These will join three existing Hubs that focus on fuel generation from sunlight, building efficiency, and nuclear reactor modeling and simulation.

Integrating Research and Development.—DOE has identified areas where coordinated work by discovery-oriented science and applied energy technology programs hold the greatest promise for progress in achieving our energy goals. The Energy Systems Simulation to increase the efficiency of the Internal Combustion Engine (ICE) will produce a set of modern, validated computer codes that could be used by design engineers to optimize the next generation of cleaner, more efficient combustion engines. An initiative on extreme environments will close the gap between actual and ideal performance of materials in nuclear environments. And DOE's Exascale Computing initiative will allow DOE to take the lead in developing the next generation of scientific tools and to advance scientific discoveries in solving practical problems.

Pursuing the Passage of HOMESTAR.—Enactment of this program will create jobs by providing strong short-term incentives for energy efficiency improvements in residential buildings. The HOMESTAR program has the potential to accelerate our economic recovery by boosting demand for energy efficiency products and installation services. The program will provide rebates of $1,000 to $3,000 per household to encourage immediate investment in energy-efficient appliances, building mechanical systems and insulation, and whole-home energy efficiency retrofits. This program will help middle-class families save hundreds of dollars a year in energy costs while improving the comfort and value of their most important investment—their homes. In addition, the program would help reduce our economy's dependence on fossil fuels and support the development of an energy efficiency services sector in our economy.

Extending Access to Tax Credit and Tax Grant Programs.—Two provisions of ARRA have been extraordinarily successful in spurring the deployment of renewable energy projects and building advanced manufacturing capabilities:

—section 48C Advanced Energy Manufacturing Tax Credit program; and

—the section 1603 Energy Cash Assistance program.

The administration is pursuing an additional $5 billion in support for the section 48C program, which, by providing a 30 percent tax credit for energy manufacturing facilities, will continue to help build a robust high-technology, U.S. manufacturing capacity to supply clean-energy projects with U.S.-made parts and equipment. The section 1603 tax grant program has created tens of thousands of jobs in industries such as wind and solar by providing upfront incentives to thousands of projects. The administration is seeking a 1-year extension of this program.

Promoting Efficient Energy Use in Our Everyday Lives.—Currently, weatherization of more than 300,000 homes of low-income families has been achieved, providing energy cost savings and financial relief to households. The fiscal year 2012 request of $320 million continues residential weatherization, while increasing the focus on new innovative approaches to residential home weatherization.

National Security—Securing Nuclear and Radiological Materials, Maintaining Nuclear Deterrence, and Advancing Responsible Legacy Cleanup

A pillar of President Obama's national security agenda for the United States is to eliminate the global threat posed by nuclear weapons and prevent weapons-usable nuclear material from falling into the hands of terrorists. As part of this agenda, the administration and the Congress worked tirelessly toward the December 2010 bipartisan ratification of New START with Russia, which cuts the number of strategic nuclear weapons each country can deploy to 1,550. After signing this agreement in April 2010, President Obama said, "In many ways, nuclear weapons represent both the darkest days of the cold war, and the most troubling threats of our time. Today, we've taken another step forward . . . in leaving behind the legacy of the 20th century while building a more secure future for our children. We've turned words into action. We've made progress that is clear and concrete. And we've demonstrated the importance of American leadership—and American partnership—on behalf of our own security, and the world's."

DOE's NNSA, through work with global partners and efforts to secure vulnerable nuclear materials, achieved significant milestones during fiscal year 2010 and fiscal year 2011 to reduce the risk of proliferation and leverage science to maintain our Nation's nuclear deterrence. Additionally, the environmental management program made progress advancing responsible nuclear cleanup from the cold war. DOE's fiscal year 2012 request seeks to build upon these successes and advance the President's nuclear security agenda.

Reduce the Risk of Proliferation

In 2009, President Obama committed the United States to an international effort to secure vulnerable nuclear material worldwide in 4 years. To solidify international support for this effort, and to address the threat of nuclear terrorism, the President convened leaders from 47 countries at the Washington nuclear security summit in April 2010. The summit resulted in a communiqué which stated, "Nuclear terrorism is one of the most challenging threats to international security, and strong nuclear security measures are the most effective means to prevent terrorists, criminals, or other unauthorized actors from acquiring nuclear materials."

The fiscal year 2012 budget for the NNSA Defense Nuclear Nonproliferation program will help advance further work that is needed to meet the goals of President Obama and the nuclear security summit, recognizing the urgency of the threat and making the full commitment to global cooperation on nonproliferation. The budget provides $2.5 billion in fiscal year 2012, and $14.2 billion through fiscal year 2016 to detect, secure, and dispose of dangerous nuclear and radiological material worldwide. This request is a decrease of 5 percent, or $138 million, from the fiscal year 2011 request, which reflects completion of accelerated efforts to secure vulnerable nuclear materials within the President's stated timeframe. The decrease also reflects our decision to await agreement between the United States and Russia on detailed implementation milestones prior to requesting additional U.S. pledged funding to support Russian plutonium disposition. The fiscal year 2012 budget request follows through on securing vulnerable materials and supports efforts to design new technologies in support of treaty monitoring and verification, which will contribute to implementation of New START. The budget also broadens cooperative nonproliferation initiatives with foreign governments and international organizations in support of the President's objective of a world without nuclear weapons. The budget continues the provision of security upgrades at selected sites, both within the United States and in foreign countries, to address outsider and insider threats, and

accelerates the pace of research reactor conversions from use of highly enriched uranium fuel to low-enriched uranium fuel.

Leverage Science To Maintain Nuclear Deterrence

The fiscal year 2012 budget request advances DOE's commitment to the national security interests of the United States through stewardship of a safe, secure and effective nuclear weapons stockpile without the use of underground nuclear testing. The 2010 Nuclear Posture Review Report calls for the United States to reduce nuclear force levels. As the United States begins the reduction required by New START, the science, technology, and engineering capabilities and intellectual capacity within the nuclear security enterprise become more critical to sustaining the U.S. nuclear deterrent. NNSA continues to emphasize these capabilities, including functioning as a national science, technology, and engineering resource to other agencies with national security responsibilities. Through the NNSA, DOE requests $7.6 billion for the weapons activities appropriation, an 8.9 percent, or $621 million, increase from the President's fiscal year 2011 request. It also is an 18.9 percent, or $1.205 million increase from the fiscal year 2010 enacted appropriation. This increase reflects an investment strategy that provides a strong basis for transitioning to a smaller yet still safe, secure, and effective nuclear stockpile without additional nuclear testing, strengthening the science, technology and engineering base, modernizing the physical infrastructure, and streamlining the enterprise's physical and operational footprint. These investments will further enable the Nuclear Posture Review's comprehensive nuclear defense strategy, based on current and projected global threats that rely less on nuclear weapons, while strengthening the Nation's nuclear deterrent through completing major stockpile system life extensions, stabilizing the science, technology and engineering base, and modernizing the infrastructure.

The Naval Reactors program ensures the safe and reliable operation of reactor plants in nuclear-powered submarines and aircraft carriers, constituting 45 percent of the U.S. Navy's combatants. The fiscal year 2012 request for Naval Reactors of $1.2 billion, is an increase of $83.2 million or 7.8 percent more than the fiscal year 2011 request and $209 million or 18.1 percent above the fiscal year 2010 enacted appropriation. Funding for this program is ramping up for reactor design and development efforts for the Ohio Class replacement submarine ($121 million), refueling of the Land-Based Prototype ($99.5 million), and recapitalization of the naval spent nuclear fuel infrastructure for the Spent Fuel Handling Recapitalization program ($53.8 million) at the Naval Reactors Facility located at the Idaho National Laboratory.

Advance Responsible Environmental Cleanup

The fiscal year 2012 budget includes $6.13 billion for the Office of Environmental Management (EM), to protect public health and safety by cleaning up hazardous, radioactive legacy waste from the Manhattan Project and the cold war. This funding will allow the program to continue to accelerate cleaning up and closing sites, focusing on activities with the greatest risk reduction. Acceleration of cleaning up sites where funding would have immediate impact was established as the overarching objective of the $6 billion in ARRA funding. EM will use the remaining $309 million of ARRA funding during fiscal year 2012 as it completes footprint reduction and near-term completion clean-up activities.

As DOE continues to make progress in completing environmental cleanup, the fiscal year 2012 budget request of $170 million for the Office of Legacy Management supports DOE's long-term stewardship responsibilities and payment of pensions and benefits for former contractor workers after site closure.

DEPARTMENT OF ENERGY FISCAL YEAR 2012 PROGRAM OFFICE HIGHLIGHTS

Office of Science—Invest in the Building Blocks of American Innovation

DOE's Office of Science (SC) delivers scientific discoveries and major scientific tools to transform our understanding of energy and matter and advance the energy, economic, and national security of the United States. SC is the largest Federal sponsor of basic research in the physical sciences, supporting programs in areas such as physics, chemistry, biology, environmental sciences, applied mathematics, and computational sciences. In fiscal year 2012, DOE requests $5.4 billion, an increase of 9.1 percent more than the fiscal year 2010 current appropriation, to invest in basic research. The fiscal year 2012 request supports the President's Strategy for American Innovation, and is consistent with the goal of doubling funding at key basic research agencies, including the SC. The fiscal year 2012 SC budget request supports the following objectives from the Strategy, including:

—Unleash a clean-energy revolution;

—Strengthen and broaden American leadership in fundamental research;
—Develop an advanced information technology ecosystem; and
—Educate the next generation with 21st century skills and create a world-class workforce.

In fiscal year 2012, SC continues to support fundamental research for scientific discovery, but today our country needs to move strongly to solve our energy problems. Therefore, the central theme of this year's budget in SC is research in new technologies for a clean-energy future that address competing demands on our environment. These efforts, coordinated with DOE applied technology programs and with input from the scientific community and industry, will emphasize research underpinning advances in noncarbon-emitting energy sources, carbon capture and sequestration, transportation and fuel switching, transmission and energy storage, efficiency, and critical materials for energy applications.

In the area of advancing noncarbon energy sources, the fiscal year 2012 budget request will provide for new investments in the science of interfaces and degradation relevant to solar photovoltaics, basic actinide chemistry research related to advanced nuclear fuel cycles, and research in materials under extreme environments relevant to extreme nuclear technology environments, and genomics-based research on biological design principles and synthetic biology tools to underpin bio-based energy solutions. Carbon capture and sequestration research will focus on novel molecular design for materials and multiscale dynamics of flow and plume migration, respectively. SC will initiate an energy systems simulation research effort focused on predictive modeling of combustion in an evolving fuel environment in support of DOE's efforts in transportation and alternative fuels. Also underpinning transportation and fuel switching, as well as energy storage, the fiscal year 2012 request will support an Energy Innovation Hub for Batteries and Energy Storage. The Fuels from Sunlight Hub, established in fiscal year 2010, as well as the EFRCs and DOE Bioenergy Research Centers also continue. Research in enabling materials sciences will support needs of future electricity transmission systems and novel building materials to improve building efficiencies.

The fiscal year 2012 budget request also provides for foundational science in condensed matter and materials physics, chemistry, biology, climate and environmental sciences, applied mathematics, computational and computer science, high-energy physics, nuclear physics, plasma physics, and fusion energy sciences; and provides for research facilities and capabilities that keep U.S. researchers at the forefront of science. The fiscal year 2012 request supports targeted increases in areas such as computational materials and chemistry by design, nanoelectronics, and advanced scientific applications and integrated application hardware-software co-design for exascale, which position the United States to secure a competitive advantage in high-tech industries and maintain international leadership in scientific computing. Underlying these investments is the education and training of thousands of scientists and engineers who contribute to the skilled scientific workforce needed for the 21st century innovation economy.

The SC supports investigators at about 300 academic institutions and from all of DOE laboratories. More than 26,000 researchers from universities, national laboratories, industry, and international partners are expected to use the SC scientific user facilities in fiscal year 2012.

ARPA–E—Transformational Research and Development

The fiscal year 2012 budget request includes $550 million for the ARPA–E plus an additional $100 million for the program from the Wireless Innovation and Infrastructure Initiative for a total of $650 million. ARPA–E was launched in fiscal year 2009 to sponsor specific high-risk and high-payoff transformational R&D projects that overcome the long-term technological barriers in the development of energy technologies to meet the Nation's energy challenges, but that industry will not support at such an early stage. An essential component of ARPA–E's culture is an overarching focus on accelerating science to market. Beyond simply funding transformational research creating revolutionary technologies, ARPA–E is dedicated to the market adoption of those new technologies that will fuel the economy, create new jobs, reduce energy imports, improve energy efficiency, reduce energy-related emissions, and ensure that the United States maintains a technological lead in developing and deploying advanced energy technologies.

Office of Energy Efficiency and Renewable Energy—Investing in Breakthrough Technology and a Clean-Energy Future

The Office of Energy Efficiency and Renewable Energy (EERE) supports research, development, demonstration, and deployment activities on technologies and practices essential for meeting national security goals by reducing dependence on oil,

meeting environmental goals by minimizing the emissions associated with energy production and use, and stimulating economic growth and job creation by minimizing the cost of energy services. The EERE portfolio emphasizes work areas where the potential impact is largest, where Federal funds are most critical. It balances investments in high-risk research with partnerships with private firms that speed the translation of innovations into practical business opportunities. The diverse set of technologies supported helps ensure that the United States has many options for meeting its energy goals. Program management is designed to identify the best groups in the country to address these challenges and supports work in universities, companies, national laboratories, and consortia.

The fiscal year 2012 budget request of $3.2 billion, the increase of 44.4 percent more than the fiscal year 2010 current appropriation, is aimed at accelerating innovation and change in the Nation's energy economy. The request includes programs associated with meeting the President's goals of investing in the next generation of clean-energy technologies, vehicles and fuels, and energy efficiency measures that reduce energy use in Federal agencies and the industrial and building sectors.

Clean, Renewable Energy Generation

The fiscal year 2012 budget request continues to work to transform the Nation's energy infrastructure by investing more than $1,164.9 million in a variety of renewable programs including:

—solar ($457 million);
—wind ($126.9 million);
—water ($38.5 million);
—hydrogen ($100.5 million);
—biomass ($340.5 million); and
—geothermal ($101.5 million).

Research, development, and deployment of these technologies will reduce the production of greenhouse gas emissions and revitalize an economy built on the next generation of domestic production. The request includes the solar SunShot program which will invest in transformative research focusing on achieving radical cost reductions in photovoltaic modules, balance of systems, and power electronics.

Energy Efficiency

DOE implements a number of efforts to increase energy efficiency in homes, transportation, and industry. The fiscal year 2012 budget requests $1,805.3 million to accelerate deployment of clean, cost-effective, and rapidly deployable energy efficiency measures in order to reduce energy consumption in residential and commercial buildings, and the industrial and Federal sectors. DOE will invest $470.7 million in the Building Technologies program and $33 million for the Federal Energy Management program. Federal assistance for State-level programs such as:

—State energy program ($63.8 million);
—Tribal ($10 million); and
—weatherization assistance program ($320 million) will continue to help citizens implement energy efficiency measures, lower energy costs and greenhouse gas emissions, and build a technical workforce.

For industry ($319.8 million), DOE will provide a balanced portfolio of advanced R&D and pursuit of near-term, low-cost opportunities with the objectives of increasing U.S. competitiveness, enhancing clean-energy manufacturing, and improving energy productivity. There will be a focus on next generation manufacturing processes and materials, activities for clean-energy manufacturing, and refocused efforts for Industrial Technical Assistance to achieve greater results with less funding through more effective leveraging of funding for deployment partnerships. A new Energy Innovation Hub on critical materials will be competed through the Industrial Technologies program. The fiscal year 2012 request also includes $588 million to accelerate research, development and deployment of advanced vehicle technologies, working in concert with biomass RD&D to reduce the use of petroleum and greenhouse gas emissions.

Better Buildings Initiative for Commercial Energy Savings.—The President's Better Buildings Initiative is focused on achieving a 20 percent improvement in commercial buildings' energy use by 2020. The initiative will include many new components to achieve this goal. The following are supported in DOE's fiscal year 2012 request: launch of the Race to Green competitive grant program for States and municipal governments to encourage higher standards for commercial energy efficiency, which is funded within the Buildings Technologies program; a new pilot loan guarantee program to support energy efficiency retrofits for buildings that serve as community assets; and increased R&D funding for building technologies. The Depart-

ment intends to work with the business and academic communities to make their organizations leaders in saving energy.

Office of Electricity Delivery and Energy Reliability—Enabling a Clean-Energy Economy

The Office of Electricity Delivery and Energy Reliability (OE) is responsible for leading national efforts to modernize the electric grid, enhance the security of energy infrastructure, and facilitate recovery from disruptions to the energy supply. DOE's fiscal year 2012 budget request for OE of $238 million, a 38 percent increase more than the fiscal year 2010 appropriation, represents a clear and determined effort to accelerate the transformation of one of the Nation's key enablers of a clean-energy economy—the electricity delivery system.

The U.S. electricity delivery system was built on technology that was developed early in the 20th century and designed for the demands and challenges of that era. Today, this aging and often congested system is facing many new and complex challenges that require considerable improvements in the physical and technological components of the system. In order to alleviate the stress on the system from increasing demand for electricity and to enable greater use and integration of renewable and distributed resources, all while maintaining the reliability, security, and affordability of electric power, R&D breakthroughs and new energy management approaches are critical in the areas of transmission and distribution, energy storage, and cyber security.

OE's fiscal year 2012 budget request provides $193 million for R&D in these critical areas to bring the next generation of grid technologies closer to deployment and commercialization. The increased investment reflects the President's vision and OE's role in competing in a worldwide technological race. As such, with $20 million in fiscal year 2012, OE will establish a new Energy Innovation Hub, or in the words of President Obama, one of "the Apollo projects of our time". The Smart Grid Technology and Systems Hub will bring together a diverse, multi-disciplinary group to develop an integrated approach to enhancing smart grid technologies and systems. OE will also expand its advanced modeling capabilities to include other system layers in order to provide a more in-depth system understanding. The energy storage program will expand to aggressively support the deployment of grid-scale energy storage technologies with new demonstrations, and the cyber security program will continue to focus on the development and integration of secure control systems.

The budget request continues to support Permitting, Siting, and Analysis (PSA) with $8 million to develop and improve policies, State laws, and programs that facilitate the development of electric infrastructure needed to bring new clean-energy projects to market, and to provide technical assistance to States and regions. It also supports Infrastructure Security and Energy Restoration (ISER) with $6.2 million to enhance the reliability and resiliency of critical energy infrastructure and to facilitate recovery from energy supply disruptions.

Office of Environmental Management—Meeting Commitments and Making Progress

The mission of EM is to complete the safe cleanup of the environmental legacy brought about from more than six decades of nuclear weapons development, production, and Government-sponsored nuclear energy research. This clean-up effort is the largest in the world, originally involving 2 million acres at 110 sites in 35 States, dealing with some of the most dangerous materials known to man.

EM continues to pursue its clean-up objectives within the overall framework of achieving the greatest comparative risk reduction benefit and overlaying regulatory compliance commitments and best business practices to maximize cleanup progress. To support this approach, EM has prioritized its clean-up activities:

—Activities to maintain a safe and secure posture in the EM complex;
—Radioactive tank waste stabilization, treatment, and disposal;
—Spent nuclear fuel storage, receipt, and disposition;
—Special nuclear material consolidation, processing, and disposition;
—High-priority groundwater remediation;
—Transuranic and mixed/low-level waste disposition;
—Soil and groundwater remediation; and
—Excess facilities deactivation and decommissioning.

The fiscal year 2012 budget request for $6.13 billion will fund activities to maintain a safe and secure posture in the EM complex and make progress against program goals and compliance commitments by reducing the greatest risks to the environment and public health, using science and technology to reduce life-cycle costs, and reducing EM's geographic footprint by 90 percent by 2015. EM continues to move forward with the development of the capability for dispositioning tank waste, nuclear materials, and spent (used) nuclear fuel. The budget request includes the

construction and operation of three unique and complex tank waste processing plants to treat approximately 88 million gallons of radioactive tank waste for ultimate disposal. It will also fund the solid waste disposal infrastructure needed to support disposal of transuranic and low-level wastes generated by high-risk activities and the footprint reduction activities.

EM carries out its clean-up activities with the interests of stakeholders in mind. Most importantly, EM will continue to fulfill its responsibilities by conducting clean-up within a "Safety First" culture that integrates environment, safety, and health requirements and controls into all work activities to ensure protection to the workers, public, and the environment, and adheres to sound project and contract management principles. EM is also strengthening its project and planning analyses to better assess existing priorities and identify opportunities to accelerate clean-up work. Working collaboratively with the sites, EM continues to seek aggressive but achievable strategies for accelerating cleanup of discrete sites or segments of work. In addition, functional and cross-site activities such as elimination of specific groundwater contaminants, waste or material processing campaigns, or achievement of interim or final end-states are being evaluated.

After the EM program completes cleanup and closure of sites that no longer have an ongoing DOE mission, postclosure stewardship activities are transferred to the Office of Legacy Management (LM). LM also receives sites remediated by the U.S. Army Corps of Engineers (Formerly Utilized Sites Remedial Action program) and private licensees (Uranium Mill Tailings Radiation Control Act, title II sites). Post closure stewardship includes long-term surveillance and maintenance activities such as groundwater monitoring, disposal cell maintenance, records management, and management of natural resources at sites where active remediation has been completed. At some sites the program includes management and administration of pension and post-retirement benefits for contractor retirees.

LPO—Helping Finance Clean-Energy Deployment

Innovative Technology Loan Guarantee Program.—To encourage the early commercial deployment of new or significantly improved technologies in energy projects, DOE requests up to $36 billion in loan guarantee authority for nuclear power facilities and $200 million in appropriated credit subsidy to support an estimated $1 billion to $2 billion in loans for renewable energy system and efficient end-use energy technology projects under section 1703 of the Energy Policy Act of 2005. The additional loan guarantee authority for nuclear power projects will promote deployment of new plants and support an increasing role for private sector financing. The additional credit subsidy will allow for investment in the innovative renewable and efficiency technologies that are critical to meeting the administration's goals for affordable, clean energy, technical leadership, and global competitiveness.

The fiscal year 2012 budget also requests $38 million to evaluate applications received under the eight solicitations released to date and to ensure efficient and effective management of the Loan Guarantee program. This request is expected to be offset by collections from borrowers authorized under title XVII of the Energy Policy Act of 2005 (Public Law 109–8).

Advanced Technology Vehicle Manufacturing Program.—DOE requests $6 million to support ongoing loan monitoring activities associated with the program mission of making loans to automobile and automobile part manufacturers for the cost of re-equipping, expanding, or establishing manufacturing facilities in the United States to produce advanced technology vehicles or qualified components, and for associated engineering integration costs.

Better Buildings Pilot Loan Guarantee Initiative for Universities, Schools, and Hospitals.—To spur investment in energy efficiency retrofits for buildings which serve as assets to our communities, DOE requests $100 million for loan guarantee subsidy costs to support up to $2 billion in loan authority for universities, schools, and hospitals. This pilot program is one component of the President's Better Buildings Initiative and would fund cost-effective technologies and measures to assist universities, schools, and hospitals save on energy usage and associated energy costs. DOE also requests $5 million for administrative expenses to carry out the program. The request is subject to the enactment of legislation authorizing this program.

Office of Nuclear Energy—Investing in Energy Innovation and Technical Leadership

DOE is requesting $852.5 million for the Office of Nuclear Energy (NE) in fiscal year 2012—a decrease of 0.6 percent from the fiscal year 2010 current appropriation. NE's funding supports the advancement of nuclear power as a resource capable of meeting the Nation's energy, environmental, and national security needs by re-

solving technical, cost, safety, proliferation resistance, and security barriers through research, development, and demonstration as appropriate.

Currently, nuclear energy supplies approximately 20 percent of the Nation's electricity and more than 70 percent of clean, noncarbon-producing electricity. More than 100 nuclear power plants are offering reliable and affordable baseload electricity in the United States, and they are doing so without air pollution and greenhouse gas emissions. NE is working to develop innovative and transformative technologies to improve the competitiveness, safety and proliferation resistance of nuclear energy to support its continued use.

The fiscal year 2012 budget supports a balanced set of RD&D activities. This program is built around exploring, through its R&D: technology and other solutions that can improve the reliability, sustain the safety, and extend the life of current reactors; improvements in the affordability of new reactors to enable nuclear energy to help meet the administration's energy security and climate change goals; development of sustainable nuclear fuel cycles; and minimization of risks of nuclear proliferation and terrorism.

NE is requesting $125 million for Reactor Concepts Research, Development and Demonstration. This program seeks to develop new and advanced reactor designs and technologies. NE is also requesting $67 million for the Light Weight Reactor SMR Licensing Technical Support program, which will support cost-shared design certification and licensing activities for two light water reactor-based designs. SMRs are a technology that DOE believes has the promise to help meet energy security goals. Work will continue on R&D for the Next Generation Nuclear Plant to support demonstration of gas-cooled reactor technology in the United States. The program also supports research on Generation IV and other advanced designs and efforts to extend the life of existing light water reactors.

The fiscal year 2012 request includes $155 million for Fuel Cycle Research and Development to perform long-term, results-oriented science-based R&D to improve fuel cycle and waste management technologies to enable a safe, secure, and economic fuel cycle. The budget also requests $97.4 million to support the Nuclear Energy Enabling Technologies program, focused on the development of cross-cutting and transformative technologies relevant to multiple reactor and fuel-cycle concepts. The Crosscutting Technology Development activity will focus on a variety of areas such as reactor materials, creative approaches to further reduce proliferation risks, and establishing advanced modeling and simulation capabilities to complement physical experimentation. The Transformative Nuclear Concepts R&D activity supports, via an open, competitive solicitation process, investigator-initiated projects that relate to any aspect of nuclear energy generation ensuring that good ideas have sufficient outlet for exploration. Modeling and Simulation Energy Innovation Hub, supported within this program, will apply existing modeling and simulation capabilities to create a "virtual" reactor user environment to simulate an operating reactor and is a prime example of the type of crosscutting, transformative activity that will enhance many research areas within NE. NE will also continue its commitments to investing in university research, international cooperation, and the Nation's nuclear research infrastructure—important foundations to support continued technical advancement.

Office of Fossil Energy—Sustaining American Energy Options Through U.S. Ingenuity

The fiscal year 2012 budget request of $521 million for the Office of Fossil Energy (FE) will help ensure that the United States can continue to rely on clean, affordable energy from traditional domestic fuel resources. The United States has 25 percent of the world's coal reserves, and fossil fuels currently supply more than 80 percent of the Nation's energy.

DOE is committed to developing technologies and providing technology-based options having public benefits including enhanced economic, environmental and energy security impacts. In FER&D, the emphasis, in keeping with Presidential priorities, is in supporting long-term, high-risk initiatives targeted at carbon capture and storage as well as advanced energy systems and on cross-cutting research.

In addition, $122 million of FE's $521 million request will be to provide for national energy security through the continued operations of the Strategic Petroleum Reserve (SPR). The budget proposes to sell $500 million of SPR oil in order to provide operational flexibility in managing the SPR.

NNSA—Leading Global Partners on Nonproliferation by Securing Vulnerable Nuclear Materials; Reaffirming Commitment to Stockpile Modernization

NNSA continues significant efforts to meet administration and secretarial priorities, leveraging science to promote U.S. national security objectives. The fiscal year

2012 President's budget request for NNSA is $11.8 billion; an increase of 5.1 percent from the President's fiscal year 2011 request. The 5-year fiscal year 2012–2016 President's request for NNSA reflects the President's global nuclear nonproliferation priorities and his commitment to modernize the U.S. nuclear weapons complex and sustain a strong nuclear deterrent, as described in the 2010 Nuclear Posture Review (NPR) Report, for the duration of the New START Treaty and beyond. NNSA's defense and homeland security-related objectives include:

—ensuring that the U.S. nuclear deterrent remains safe, secure, and effective while implementing changes called for by the 2010 NPR and the New START Treaty;

—broadening and strengthening the NNSA's science, technology, and engineering mission to meet national security needs;

—transforming the Nation's cold-war era weapons complex into a 21st century national security enterprise;

—working with global partners to secure all vulnerable nuclear materials around the world and implement the President's nuclear security agenda expressed in the May 2010 National Security Strategy and the Nuclear Posture Review report; and

—providing safe and effective nuclear propulsion for U.S. Navy warships.

The fiscal year 2012 budget request of $7.6 billion for the weapons activities appropriation provides funding for a wide range of programs. Requested activities include providing direct support for the nuclear weapon stockpile, including stockpile surveillance, annual assessments, life extension programs, and warhead dismantlement. science, technology, and engineering programs are focused on long-term vitality in science and engineering, and on performing R&D to sustain current and future stockpile stewardship capabilities without the need for underground nuclear testing. These programs also provide a base capability to support scientific research needed by other elements of DOE, the Federal Government national security community, and the academic and industrial communities. Infrastructure programs support facilities and operations at Government-owned, contractor-operated sites, including activities to maintain and steward the health of these sites for the long term and construct new facilities that will allow the United States to maintain a credible nuclear deterrent. The unique nuclear security expertise and resources maintained by NNSA are made available through the National Laboratories to other DOE offices, agencies and to the Nation for security and counterterrorism activities.

The weapons activities request is an increase of 8.9 percent more than the President's fiscal year 2011 request. This level is sustained and increased in the later out-years. The multi-year increase is necessary to reflect the President's commitment to maintain the safety, security, and effectiveness of the nuclear deterrent without underground nuclear testing, consistent with the principles of the Report on the Plan for the Nuclear Weapons Stockpile, Nuclear Weapons Complex, and Delivery Platforms (known as the "1251 Report") and the Stockpile Management program as stipulated in sections 1251 and 3113(a)(2) of the National Defense Authorization Act for Fiscal Year 2010. Increases are provided for direct support of the nuclear weapon stockpile, for scientific, technical, and engineering activities related to maintenance assessment and certification capabilities, and for recapitalization of key nuclear facilities. The President's request provides funding necessary to protect the national resource of human capital at the national laboratories through a stockpile stewardship program that exercises and retains these capabilities.

The fiscal year 2012 request for Defense Nuclear Nonproliferation (DNN) is $2.5 billion; a decrease of 5.1 percent from the President's fiscal year 2011 request. This decrease reflects completion of long-lead procurements for the Mixed Oxide Fuel Fabrication Facility (MO_X) and Waste Solidification Building (WSB). It also reflects our decision to await an agreement between the United States and Russia on detailed implementation milestones prior to requesting additional United States-pledged funding to support Russian plutonium disposition. The administration prioritizes U.S. leadership in global nonproliferation initiatives as directed through the National Security Strategy and has advanced this agenda through commitments from global partners during the 2010 nuclear security summit. In addition to the programs funded solely by the NNSA, DNN programs support interagency and international efforts to protect national security by preventing the spread of nuclear weapons and nuclear materials to terrorist organizations and rogue states. These efforts are implemented in part through the International Atomic Energy Agency, the G8 Global Partnership against the Spread of Weapons and Materials of Mass Destruction, and the Global Initiative to Combat Nuclear Terrorism.

DNN supports the President's goal to secure vulnerable nuclear materials around the world within 4 years. The Global Threat Reduction Initiative's emphasis in fiscal year 2012 is to convert domestic and international nuclear reactors from weap-

ons-usable highly enriched uranium fuel to low-enriched uranium fuel (LEU); while preserving our capability to produce the critically needed Molybdenum 99 isotope. The fiscal year 2012 President's request for International Nuclear Materials Protection and Cooperation reflects selective new security upgrades to buildings and sites in accordance with the President's goal to secure vulnerable nuclear materials around the world within 4 years, as well as enhancements and sustainability support for previous work. The Fissile Materials Disposition program continues domestic construction of the MO_X Fuel Fabrication Facility scheduled to come online in 2016; and design for the pit disassembly and conversion capability to provide it with plutonium oxide feedstock.

The President's request of $1.2 billion for Naval Reactors is an increase of 7.8 percent more than the President's fiscal year 2011 request. The program supports the U.S. Navy's nuclear fleet, comprised of all of the Navy's 72 submarines and 11 aircraft carriers, which constitute 45 percent of the Navy's combatants. The United States relies on these ships every day, all over the world, to protect our national interests. The budget provides funding increases for the *Ohio* class replacement submarine to design and develop required submarine reactor plant technologies. R&D is underway now, and funding during this Future Years Nuclear Security program is critical to support the long manufacturing spans for procurement of reactor plant components in 2017, and ship construction in 2019. Resources are also requested in fiscal year 2012 to support design work for the recapitalization of the spent nuclear fuel handling infrastructure and refueling of the Land-based prototype.

The Office of the Administrator appropriation provides for Federal program direction and support for NNSA's headquarters and field installations. The fiscal year 2012 request is $450.1 million; a 0.4 percent increase more than the President's fiscal year 2011 request. This provides for well-managed, inclusive, responsive, and accountable organization through the strategic management of human capital, enhanced cost-effective utilization of information technology, and integration of budget and performance through transparent financial management practices. The increase reflects additional Federal oversight for construction of the Pit Disassembly and Conversion project, the Uranium Processing Facility, and the Chemistry and Metallurgy Research Replacement Facility.

CONCLUSION

The United States faces a choice today: will we lead in innovation and out-compete the rest of the world or will we fall behind? To lead the world in clean energy, we must act now. We can't afford not to.

Thank you, and now I am pleased to answer any questions you may have.

HYDROGEN TECHNOLOGIES

Senator FEINSTEIN. Thank you very much, Secretary.

I am going to try to get three quick questions in my first round. One is on hydrogen and one is on the SunShot Initiative, and the third on the loan guarantee program.

You have proposed to cut hydrogen by $100 million in fiscal year 2012. That is a cut of $70 million from the 2010 level, and you zeroed out all funding for fuel cells in the fossil energy program. We gather your advisory committee was dismayed by that. But I think it is important that you tell us what your current view is on hydrogen technology and whether it can be successful or not.

Secretary CHU. Sure. First, in terms of the fuel cells, we do have a research program in fuel cells for stationary fuel cells. There has been very good progress made in fuel cells and in the longevity in fuel cells and bringing down the costs.

The idea of a hydrogen economy is something that is very helpful, but the fundamental issue is we need a source of hydrogen that will make good economic sense. Right now, our hydrogen comes from reforming natural gas. When you reform natural gas, you create hydrogen and carbon dioxide, so in terms of the carbon benefit, there is none unless you sequester the carbon dioxide.

In order for that to happen, I think we have to develop more sources of natural gas that can allow you to do those things. So, the first priority is to develop sources of hydrogen that will make economic sense, and to sequester the excess carbon dioxide. There is a hydrogen storage issue in automobiles. Right now, we are going to continue the research in the area of high-pressure tanks. And so, there is the storage part, there is the source of hydrogen, which I think is the most fundamental issue. You know, it is a transformation of energy from one form to another. And the fuel cell part is actually going along well. The stationary fuel cells, because of the higher efficiency, are something we can see can be deployed quickly in the next 5 or 10 years. There are a number of commercial companies doing this, and so we will continue in research on developing better fuel cells for stationary sources. And we also are looking at how we can actually develop the source of hydrogen that will actually lead to a hydrogen economy.

So, that is why we are——

Senator FEINSTEIN. Quickly, how realistic is all of that?

Secretary CHU. I think the fundamental thing is the source of hydrogen. Right now it is natural gas, but natural gas will have to be significantly more abundant and less costly. We are going in the right direction, but it will have to be significantly more abundant. Or the gasification of coal, again, with carbon sequestration, but that is a technology issue to make it cost effective. But there has to be—it is turning a hydrocarbon into hydrogen and sequestering the carbon.

SOLAR TECHNOLOGY PRICES/SUBSIDIES

Senator FEINSTEIN. Okay. Now, the second question is on the SunShot Initiative, which seeks to reduce the cost of solar power to roughly $1 per watt and at that price. The goal is for solar power generation to become cost effective without subsidies with other forms of electricity generation.

I am very pleased to see that the SunShot Initiative will include the photovoltaic manufacturing initiative. As you will recall, several years ago, you told me that photovoltaic was not cost effective, but you expected at that time that it would take 4 to 5 years to become cost effective. So, I would like to know what progress has been made there as well. Do we need to focus resources on the SunShot Initiative on domestic manufacturing?

Secretary CHU. Well, first, the cost of photovoltaic—of solar energy has gone down by a factor, too. It has been decreased by 50 percent in the last 5 or 6 years worldwide. The full cost of 10 megawatt or above—large sale—not rooftop, but large scale. So it has come down by that much.

In this decade, we have talked to business, not only in the United States, but abroad, and every manufacturer says that in their business plan, if the cost does not come down by another factor or two, we cannot produce them to be a factor or two less, then we will probably go out of business. So, they are actually banking on this.

And then taking that as the starting point, we have started to engage in these companies and in ways to say, can we accelerate this? Can we do something with these companies and with research

that can actually accelerate this progress? And so, our ambitious goal is to say, can you reduce the cost by 75 percent instead of 50 percent by the end of this decade? That is a magical price because at that price, in many parts of the United States, then without subsidy, it is competitive with any other form of energy. So, that is a big deal.

When you drop by 50 percent, there are certain areas of peak demand, I think it will be. And so, our goal in most of our energy endeavors is to devise a plan so we can get there without subsidy. You know, I, too, share the belief that you might need to subsidize for a little while, but you do not want to subsidize for 100 years. And is there a technology pathway that can develop these things without subsidies? And so, the SunShot Initiative is really to say this is within reach. And there has been remarkable progress.

In terms of your question about manufacturing, manufacturing innovation is another key part of what we will need to do in order to be competitive with the rest of the world. And it is that manufacturing innovation that began with Henry Ford, that he was willing to invest 5 years of Ford's money in a beginning company to develop an assembly line. They started by making handmade cars, but it transformed the automobile industry.

So, there are things that we are invested in that we are actually quite excited about—new approaches of either thin film or even silicone, a totally new approach to manufacturing sili-composed cells could actually transform the landscape. And so, we are hoping companies research and develop new manufacturing things that will give us a competitive edge in the decades to come. And that is an important part of what we are doing as well.

Senator FEINSTEIN. Thank you very much. My time is up.

Senator Alexander.

Senator ALEXANDER. Madam Chairman, I see the Republican leader is here. I would be glad to defer to him and then go after him.

Senator FEINSTEIN. I was looking on the wrong side for you, Mitch. Sorry.

Senator ALEXANDER. We hope he is there.

Senator FEINSTEIN. I recognize the Republican leader.

Senator MCCONNELL. Thank you very much, Senator Alexander and Chairman Feinstein.

ENRICHED URANIUM TAILS AT PADUCAH

Mr. Secretary, welcome. I am here to focus your attention on the Paducah Gaseous Diffusion Plant, which is, I believe, you know, has been enriching uranium for 60 years. It happens to be the economic engine of far western Kentucky. Many people think of Kentucky as a coal State, which we are, but we are also a nuclear State.

The plant has 1,200 employees and it is in the process of closing down. There are, however, 40,000 cylinders of depleted uranium at Paducah, which are typically referred to in the business as tails. If they were re-enriched, it would be a profitable venture.

These are Government-owned resources, highly valued, stored in a lot which could be sold to create revenue for the Government, and in the meantime, happily enough for western Kentuckians,

keep 1,200 people from collecting unemployment. So, a revenue raiser for the Government and an avoidance of unemployment for 1,200 people, are you familiar with the tails issue at the uranium enrichment plant?

Secretary CHU. Yes, I am.

Senator MCCONNELL. It is my understanding that DOE, at least at the moment, does not have a current plan for re-enriching those tails at Paducah. Is that correct?

Secretary CHU. That is correct.

Senator MCCONNELL. Kentucky's unemployment rate is right at 10 percent. We cannot afford to lose 1 more job, let alone 1,200. If there is the potential for DOE to save these jobs, would you not think that would be worth pursuing?

Secretary CHU. We are certainly very concerned about any job impacts in actions we take, but there are other issues that I would be happy to talk to you about, having to do with another commitment for uranium in another uranium enrichment plant. We cannot release more than 10 percent of the uranium market because the uranium mining industry in the United States could be affected. And so, we are bound to only release 10 percent or less of what is ever on the market. We have commitments in 2011 and 2012 for another uranium enrichment process going on. And so, we have made that commitment, and so we have to try to figure out what to do about the Paducah plant beyond that. But we are certainly very aware and very sympathetic to this plight.

Senator MCCONNELL. Well, let us assume we do not do that. Then the question is, do we have the funds in the 2012 budget to safely and secure idle the plant after it closes and returns to the control of the Government?

Secretary CHU. Well, what we need to do is work with you on trying to figure out a path forward for these jobs. I have to be candid. The gaseous diffusion technology is one which is very energy intensive. And I would rather us invest in more forward-leaning technologies such as improved centrifuges. I do think the United States would like to have an in-house institute for a technology of our——

Senator MCCONNELL. But that is not the issue at Paducah, is it? That is going to happen in Portsmouth.

Secretary CHU. No, it is going to happen in Portsmouth.

Senator MCCONNELL. So, in Paducah, the issue is, will we re-enrich the tails and actually make money for the Government, or if we are not going to do that, will the Government pay for a cleanup, because we have been getting the clean-up funding on an annual basis, but there is apparently no plan in your budget for cleanups after the operation ceased. So, under this scenario, it strikes me the Government loses an opportunity for revenue, we lose 1,200 jobs, and you are not funding the cleanup, which would cost you money, whereas re-enriching the tails would actually gain the Government money. Is that—am I correctly understanding that?

Secretary CHU. Yes and no. I mean, certainly it will be our obligation to clean up if and when Paducah closes down. But that depleted uranium will be there. And, again, to go forward in the most cost effective way, if there is a technology that they can more effectively enrich those tails, we would be more biased to just doing

that. But certainly we have an obligation to clean up that plant, once it is closed down.

Senator MCCONNELL. When are we going to see the plan?

Secretary CHU. We will get back to you and your staff on that.

Senator MCCONNELL. Well, you know, we have got 1,200 employees sitting there wondering if they are going to be without a job. And I understand it is a tough time for everyone. Unemployment is high in Kentucky. But here you have an opportunity to continue 1,200 people working, actually raise revenue for the Government by re-enriching these tails. And what I think I hear you saying is you have got no plan for either contingency at the moment. Is that correct?

Secretary CHU. Right now, we have to make very, very hard decisions given the budget reality. As Chairman Feinstein said, we do not expect the Congress to give us our proposed budget. We need to work——

Senator MCCONNELL. How many of your tough decisions give you an opportunity to actually raise revenue?

Secretary CHU. Well, we are actually raising revenue on, as you mentioned, on the United States Enrichment Corporation (USEC) side for the same reason. And so, it is raising revenue in the most cost-effective way. And we always like to raise revenue. But remember, we are at this limit of 10 percent.

Senator MCCONNELL. Well, it is not a very satisfying answer if you are an employee in western Kentucky. I think I correctly heard you that you have no plan to re-enrich the tails, and you have currently not intended to budget, at least according to our figures, by 2014, you are not even going to meet the annual cleanup needs that have been met on an annual basis at the plant, and have no current plan for addressing the shortfall.

Secretary CHU. We can look at the cleanup issue, but, again, you know, the tails are still there. And it is not as though we are either going to move on it next year or the year after.

Senator MCCONNELL. No, I understand that. But you start re-enriching them now; you still employ 1,200 people——

Secretary CHU. Right.

Senator MCCONNELL [continuing]. And the Government makes money. You leave them sitting there and then you have got the clean-up obligation, which costs you money. I am curious as to why you think this makes sense.

Secretary CHU. Because if we do this enrichment with this old and now it is a very energy-consuming technology that was developed during World War II, and there are better technologies that we would like to use and develop in house, in house meaning in the United States. And so, again, it is a decision with our limited budget.

Senator MCCONNELL. So, you would rather make the money later than make the money now.

Secretary CHU. Well, I would go back to—we can enrich it now, but then we cannot make the money because we cannot release it on the market because of already what is being put in place with USEC.

Senator MCCONNELL. Well——

Senator FEINSTEIN. Senator——

Senator MCCONNELL. Thank you very much, Madam Chairman.

Senator FEINSTEIN. I have tried to be as liberal as possible.

Senator MCCONNELL. No, I appreciate it very much. Thank you so much.

Senator FEINSTEIN. Thank you very much. Senator Lautenberg, early bird, you are next.

GLOBAL ENERGY RACE

Senator LAUTENBERG. Thank you, Madam Chairman, and thank you, Secretary Chu for the wonderful work you do for our country and for helping us now to try and solve problems that will directly affect how our economy recovers and how we protect ourselves from a lack of energy to fuel our needs.

In 2009, China surpassed the United States in private sector clean-energy investment for the first time. In 2010, China began to pull away, attracting $54 billion in private investment. Now, they recently announced that its government would begin investing the equivalent of $75 billion in clean energy annually. Now, will your agency's roughly $30 billion budget invest enough for us to regain the lead in the global clean-energy race?

Secretary CHU. You are quite right to be concerned about China's investment, but it is not only China. I would add it is Korea and it is the European Union, Germany, and Great Britain. Other countries are also looking at clean-energy development, both on the efficiency side and on the generation side. These are going to be the big business opportunities in the world market going forward in the coming decades. And so, what we need to do is position the United States so that we can be a leader in this. We have been a leader in other technologies. It is, quite frankly, ours to lose because we still have the best research institutions. We have a national lab system that is incomparable. And we need to develop the mechanisms to allow American industry to make the inventions and to manufacture in the United States.

Now, in terms of what you specifically asked, what China and others are doing, they are helping companies with, for example, loans and—or loan guarantees. As you know, we have an oversubscribed loan program. I think Senator Feinstein was—we could not get to that part of it, and it is something that we feel it is a good, highly leveraged way of supporting industry investment and to—because when we see these companies beginning to build manufacturing facilities abroad, this is one of the factors that comes through loud and clear, that they are getting loan guarantees from countries like China. And I think so, looking forward, I would love to work with the Congress. You know, part of our loan guarantee program is dependent upon if ARRA falls through—it is highly leveraged, and it is a guarantee. So, those programs I think would be an important part going forward.

Senator LAUTENBERG. Right, but does that, Secretary Chu, suggest that we are going to fall further behind this—back of these countries with the kind of budget that we are talking about at this moment?

Secretary CHU. Well, I think, you know, that's why the President has chosen to increase the energy budget, when other agencies were going down. And the President said that this is a very—in

order to preserve the future and to win the future, in order to actually go forward, that investments in the science and research and the development of these things is going to be crucial to our economic prosperity going forward. And this is why there were hard decisions made and why the energy budget saw the increase that it did.

ENVIRONMENTAL IMPACT OF FRACKING

Senator LAUTENBERG. Earlier this month, you appointed a panel to study and make recommendations on the practice of fracking. Cornell University recently released a study that says the natural gas extracted using fracking as the technique to produce—can produce much more global warming pollution than coal. And given the administration's commitment to reduce greenhouse gasses, would your panel consider recommending that the industry capture some of these emissions—can they capture some of these emissions from natural gas?

Secretary CHU. Well, this advisory board, is actually going to be meeting for the first time today and tomorrow. I am aware of that Cornell study. There was, in fact, another paper just published last week in the "Proceedings of the National Academy of Sciences", which I read very thoroughly. And it does raise some questions that will need to be answered regarding this.

We are very concerned about the environmental impact, but we also see that if you can do this safely and you can extract the gas safely, and not have excess emissions or pollution of water tables, that it is a transition to a clean-energy future, and it is producing energy in the United States. And so, the administration wants to do this is an environmentally responsible way. We need to do it in an environmentally responsible way. There is no question about that. But there are these studies that we are very well aware of, and personally given the charge of the subcommittee, have spent a couple of weekends reading about this stuff, learning about this, and there are some concerns. But we want to get all the perspectives and find out what is really going on.

Senator LAUTENBERG. We will be anxious to get the panel's report, and hope that we can establish the fact that this does not present other environmental problems——

Secretary CHU. Right.

Senator LAUTENBERG [continuing]. That it worsens the situation rather than improve it.

Thank you very much, Mr. Secretary.

Senator FEINSTEIN. Thank you very much, Senator Lautenberg.

Senator Alexander.

ENERGY RESEARCH AND SUBSIDIES

Senator ALEXANDER. Thank you, Madam Chairman.

Mr. Secretary, Governor Haslam recently traveled to visit with you and Senator Cochran and me about environmental cleanup at Oak Ridge, urging a focus on the dangers of the mercury there. And factoring in the large population in the region, I would be remiss if I did not thank you for the meeting and underscore the importance of that.

My questions, though, are along the lines of my comments in the opening statement about energy research. Does it sound about right that the Department has about $6 billion more or less for energy research?

Secretary CHU. Roughly speaking, yes.

Senator ALEXANDER. Roughly $6 billion. What should it be? If you were Professor Chu and were not bound by the office of budget, I mean, what should—well, let me put it another way. You talk about hubs; I talk about Manhattan Projects. I think—are we not both talking about accelerating energy research in a focused way?

Secretary CHU. Yes, and, I am here in defense of the President's budget——

Senator ALEXANDER. Right.

Secretary CHU [continuing]. But I would love to see increases. I think, as I said before, that this is research we do with a goal of getting the private sector to pick up this stuff and run with it and to give them, as Chairman Feinstein said, you know, the research center—Argonne National Laboratories, using a light source, a facility actually gave a leading edge and developed a series of patents that allow us to make better batteries.

Senator ALEXANDER. So, if I may interrupt, we are talking about 500-mile batteries and $1 a watt solar power and a better way to recycle, use nuclear fuel——

Secretary CHU. Right, right.

Senator ALEXANDER [continuing]. And trying to lead the country in that. And even crusty, miserly Republicans often agree that research is an appropriate role of the Federal Government, while we might worry about some other things.

Given the importance of that—I mean, and as we—given the budget problems we have with 40 cents of every $1 being borrowed and we all know that we are going to have a rough 2, 3, or 4 years trying to make up a budget, should we not be looking hard at such things as long-term subsidies? I think particularly, you know, my colleagues talk about big oil all week, you know. I think we ought to talk about big wind. And I mentioned earlier that we are committed to spending $26 billion—taxpayers are—over the next 10 years on wind subsidies in a production tax credit that was passed as a temporary measure in 1992.

Now, you have got in your budget money for research on offshore wind. It seems to me that is appropriate. It seems to me that to continue to subsidize over a long term a mature technology is not appropriate—jump starting electric cars, jump starting natural gas, research for offshore wind. All those things might be appropriate, but if we looked at long-term energy subsidies, whether they're big oil or big wind, it looks to me like we could find money to take a fairly modest energy research budget of $6 billion and make it $7, $8, $9, or $10 billion, and move us much more rapidly toward a low-cost, clean-energy future rather than a high-cost, clean-energy future. I mean, we have $1 solar power. That is cheaper. If we have 500-mile batteries, that is cheaper. That uses a lot less gas.

So, why shouldn't we be developing a policy that takes money from these long-term subsidies and putting them into energy research?

Secretary CHU. I would agree with you absolutely that what we need to do in designing any energy research program or any energy development—we are responsible for the entire innovation chain. And what we need to do is design things and have a program going forward where we do not want to start businesses that cannot survive indefinitely without a subsidy. That is just not the way to do things. So, I think we are in total agreement with that, whereas—and you spoke about this—for example, offshore wind has great possibilities. We need to develop that to get it going. And the SunShot, if we see—it is going to be an international race, and it is. And batteries, it is an international race.

Senator ALEXANDER. Right.

Secretary CHU. And, therefore—but it is going to be the research——

Senator ALEXANDER. But the amount of money to do the research is relatively modest. I mean, you asked for—in offshore wind it was $27 million maybe——

Secretary CHU. Right.

Senator ALEXANDER [continuing]. For small nuclear reactors, $60 million, ARPA–E is $100 million and—well, you have asked for $500 million, but you got—I mean, you got $180 million.

Secretary CHU. Right.

Senator ALEXANDER. And these big subsidies, whether it is big wind or big oil, you know. It seems like the money could be better spent, and that one of the things we might be able to help do is reduce the long-term subsidies and focus it more on energy research where I think there is probably a consensus about the appropriateness of Federal spending.

Thank you, Madam Chairman.

Senator FEINSTEIN. Thank you, Senator.

Senator Cochran.

NUCLEAR ENERGY AND ENERGY SECURITY

Senator COCHRAN. Madam Chairman, thank you for chairing this hearing.

Welcome, Mr. Secretary. We appreciate your being here to help us understand the administration's proposal for spending in your Department for the next fiscal year.

I am pleased to notice that it is recommended that nuclear energy continue to have a place in the national strategy for energy independence and guarantee supplies of energy for our country. There is an increase in funding for the Office of Nuclear Energy we noticed in the budget request.

I wonder, what do you think the priorities of that office should be in terms of reaching our goals and helping maintain our energy security as a Nation?

Secretary CHU. Sure. I would love to answer that question. Again, the way we are approaching this is we are looking at what industry is going to be doing and then saying what can we do to add value to this? And it is on things like, for example, using high-performance computing, which is in a very sweet spot.

Like what is done at Senator Alexander's laboratory in Oak Ridge. They are the leader of the fastest civilian—fastest. Actually now it is China that is pushing out ahead. But to use high-perform-

ance computing to design next-generation reactors and how to deal with these things so you can skip engineering steps, engineering design things that you can simulate in a much wider space. So, we think that we can do things of that nature.

Senator Alexander spoke about how to develop fuel recycling that makes economical sense and that makes anti-proliferation sense, so that the amount of electricity you generate from the nuclear field could be 10, 20 times more than what we do today. And so, for the same amount, you can do a lot more. I think that is something that is very much part of what we want to do, you know.

So, new recycling technologies, there is a long road home, but we have to continue these new advanced reactor technologies, things of that nature.

STRATEGIC PETROLEUM RESERVE

Senator COCHRAN. One decision that has been made by the Department relates to the Strategic Petroleum Reserve (SPR). In our State of Mississippi, that program is dead in the water, as I understand it. There is a decision that I am advised canceled the expansion of the SPR in our State. And we have submitted requests for information, explanation, what plans do you have for that program, and we have not received a response from DOE. I wish you could go back and see if you do have a response to that question. We would like to know about what your plans for the future are with respect to the SPR. You could ask for that now, if you would like.

Secretary CHU. Well, we will get back to you on the details. But right now, the SPR, we are required to have a 90-day supply in case of a disruption of supply, of which 75 days comes from the SPR and the rest from civilian stock. And right now, the—we are repairing one of our caves, but we are actually at very close to full capacity. And so, but we can get back to you on the details of what we have planned going forward.

But the point is, we are at—we are very close to maximum capacity. We have a cavern or two that needs repair. I do not quite remember whether this was in Mississippi or not, and we have to tend to that.

Senator COCHRAN. Well, we do know that we have been trying to get answers to questions about that for 2 years now, I'm told, and have not gotten a satisfactory response. So, I do not know that there is a response, but I think we are entitled to hear——

Secretary CHU. Sure, you are right.

Senator COCHRAN [continuing]. What your plans are.

Last year after the President recommended cancelling that program, the Congress voted to rescind all the funds that we had worked for to provide the Department about $70 million for the expansion of the SPR. So, there is a breakdown in communication and about whether you need the money. And if you are not going to use the money, we may help you think up other ways to do it than what you are planning to do with the money.

YUCCA MOUNTAIN/NUCLEAR WASTE

Well, there was a Blue Ribbon Commission chartered last year by President Obama to study nuclear waste disposal options. I wonder if you could give us any information about this program,

whether or not you have a specific plan. We understand the recently cancelled Yucca Mountain program is in limbo, unclear about whether funds are going to be used for that program or not. It gives me the impression that we are having a hard time finding out what the Department is up to in some of these areas. Could you tell us about what your plans are for storage at Yucca Mountain?

Secretary CHU. Sure. First, I believe that there is a first draft of an outline of some of the recommendations from this Blue Ribbon Commission. I think rather than comment here on these draft things that have been put out, I would rather them give an official report. Well, let me comment on one or two of them.

What they have said is that, first, that there—one of the things they said again goes to Senator Alexander's point that while there is no immediate technology that we can use for reprocessing, you know, we still should continue to develop that technology. They have looked at other countries that have found siting for notably Sweden and Finland, where there was a process that seemed to have more acceptance of the local people in those regions of the country. And so, at least in this draft recommendation they are saying we should look at those processes. We have examples of low-level waste where things have gone very successfully, and there has not been opposition. And so, there are a number of other things.

So, we need to go far in this. It is the responsibility of DOE. As you know, we are positive on nuclear power in the future. And whatever occurs is a DOE responsibility to deal with the waste.

Senator COCHRAN. Madam Chairman, my time has expired.

Senator FEINSTEIN. I thank you very much, Senator Cochran.

Senator Johnson.

Senator TIM JOHNSON. Secretary Chu, welcome.

DEEP UNDERGROUND SCIENCE AND ENGINEERING LABORATORY AT HOMESTAKE

I am pleased to see DOE is continuing support for the Deep Underground Science and Engineering Laboratory at Homestake at Homestake Mine in Lead, South Dakota. I appreciate that your agency included $15 million for the project in your fiscal year 2012 budget request.

I understand DOE is nearing conclusion of an internal review of the project and am interested in its results. Specifically, could you talk about how DOE is prepared to work with the project team to ensure that your recommendations are known and included in future financial and construction planning?

Secretary CHU. Well, first, I know we are undergoing this review, and I have not specifically spoken with Bill Brinkman about this yet. We are working, though, as you well know—the National Science Foundation (NSF), is having some second thoughts—this is very discouraging to us—about that, especially since they started it.

But in any case, I think we are trying to figure out a path forward on the investments that have been made by South Dakota and DOE and NSF. So, in the interim we continue to get funds to pump the water, continue doing this. But if we lose on the long

term this—you know, the support of what was supposed to be roughly a 50/50 partner, we are trying to understand how we can go forward in a perhaps reduced program or what our options are, especially in whatever funding we will be getting in fiscal year 2012 and going forward.

And so, these, again, are going to be very difficult choices. There are a few requirements that we would like to have done, and we still remain committed. We need to get some of those experiments done. But as I said, I have not seen the report or—and so I will be waiting for that.

Senator TIM JOHNSON. On a related note, as you know, a great deal of activity is already underway at Homestake, and we had previously hoped NSF would be, at this stage, be providing more support for these activities. In lieu of significant NSF construction funding, and in order to preserve the great progress and investment we have already made, what is DOE prepared to do to ensure that no jobs are lost while you evaluate your long-term plans for the project and for high-energy physics in general?

Secretary CHU. Yes. We are very aware of that and trying our best to keep the—there is a very dedicated scientific team that has been assembled on this. And while we try to put this path forward, again for 2011 and 2012, there is going to be continued funding, we do not want to lose and dissipate the scientific teams that have been developed, and just as we do not want the water to come back into the mine.

And, again, I do not know exactly the timing of when or how the Office of Science will bring forward a recommendation to me, you know, and I am sorry. It is disappointing, but that is all I can say about it. And it is an unbiased—completely unbiased point of view, I have to say that my old laboratory was the lead laboratory in this, so I know personally how it is affecting a lot of people. But, you know, not that I am going to play favorites, but it is—I know personally—and I know personally. As you know, I visited the mine in South Dakota, and I know personally all the investments that South Dakota has made in this.

HIGH-PRIORITY EXPERIMENTS

Senator TIM JOHNSON. You referenced high-priority experiments. Could you list a few?

Secretary CHU. Sure. For high-energy physics, we are investing in what we call the high-intensity frontier. We are also investing in the highest-energy machine, CERN, the highest-energy machine there. So, right now because of what happened decades ago for the super connecting collider, the highest-frontier energy machine is turning on the large hadron collider at CERN. And they had a hiccup, but they have recovered well from that hiccup. And so, what we have done is we still want to deal with high-energy physics as a significant part of our program. We still wanted to go forward. And so, the good news is American scientists are actively participating in that machine, and, for the first time, an American scientist is now the lead in one of the major detectors.

But we also want to make investments here in the United States. And so, we have going forward, and with the Fermilab Lab director, Piermaria Oddone, he made and we collectively made a deci-

sion that since the large hadron collider is going great guns, we need to invest in the future, which is the new sources for neutrino beams at Fermilab. So, we have every intention of continuing to invest in Fermilab in those—and, again, as you know, in one of the experiments in the Fermilab investments for the neutrinos is the use of the detector in South Dakota. So, that is why we are especially disappointed in the events that unfolded last year.

Senator TIM JOHNSON. Thank you, Secretary Chu.

Senator FEINSTEIN. Thank you, Senator Johnson.

Senator Landrieu.

Senator LANDRIEU. Thank you, Madam Chair.

MISSISSIPPI RIVER LEVEL

If the subcommittee will just give me 1 minute of latitude before we get into Energy, Madam Chair, I wanted to just call everyone's attention to the fact that the Mississippi River, as we meet here today, is flowing at an extraordinary historic level, and this subcommittee has jurisdiction over water and energy. And I just wanted to put into the record, Madam Chair, these statistics that are startling.

The river is flowing at 172 billion cubic feet per week, 7.2 billion cubic feet every hour. And as one article today described it, it said it is a snarling, powerful beast barging its way south. This subcommittee has jurisdiction, as you know, and has done, I might say, Madam Chair, a remarkable job in the course of the last decade with a lot of help to build this Mississippi River system. But it is going to be up to us to watch to see how it works in the coming days and weeks and be prepared to do what we need to do to make sure that people are protected should this ever happen again. So, I would like to submit that to the record without objection.

Senator FEINSTEIN. So ordered.

I thank you for the comments, and I thank every member of this subcommittee. You know, I come from earthquake country, know what you have gone through constantly, and how hard it has been.

Senator LANDRIEU. And it is not just Louisiana; it is Tennessee and Mississippi. And Senator Cochran full well knows what the people in north Mississippi are experiencing right now and the Senator from Tennessee. But this subcommittee has jurisdiction over that system.

LOAN GUARANTEES FOR ADVANCED TECHNOLOGY AUTOMOBILES

But three questions really quickly. One, Mr. Secretary, you and I have spoken several times about this, a project that is pending before your Department now. The Department's loan programs have supported more than $30 billion in loans, loan guarantees for about 28 clean energy and enhanced automotive efficiency projects. One of those projects is pending in Louisiana right now. And the reason I bring this to your attention is it is very timely. Our legislature is meeting as we speak. They have reserved basically $68 million to support this project.

The application has pending before you and your Department for 2 years. Do you have any update for us at all on Next Auto Works, what the timeline looks like, when they might know yes or no, because this application we think is quite strong and quite competi-

tive, it could create more than 1,000 jobs in this part of the country. But as importantly as that, it can produce vehicles that can achieve 40 miles per gallon, which I know the chair, who has been a leader on CAFE standards, would appreciate. This is new technology for the combustible engine, but a new technology that seems to us to meet the goals of what the President and what you are touting.

Can you give us any update at all about where we would be with this application?

Secretary CHU. Well, I do not think it would be appropriate in a Senate hearing. As you know, in policy, we really—the details of specific loan applications, we have to honor the relationship we have with the applicant.

Senator LANDRIEU. I realize that, but generally—and I realize you cannot give the details. I am not asking. But generally, does this fit with your goals of creating new automobile companies that are pressing forward with new technologies to produce automobiles that can almost double our efficiency? Does that generally meet with the goals of your Department?

Secretary CHU. Well, if you are asking—I think what you are asking is, are we in favor of the advanced technology automobile program that we have and its loan, and the answer is yes. We think it played a very important part in actually helping not only, you know, innovative companies, but also established companies, in developing a new line of automobiles with advanced technology that get better mileage and are at high efficiencies. That means that we can, again, take back a leadership role in automobiles. I mean to be candid, we had this for three-quarters of a century, but it is something, you know, that Europeans and Japanese and the Koreans are now wrestling with. And so, we are in favor of supporting innovative technologies like that.

Senator LANDRIEU. Well, let me ask you because I do not want to lose my time, if you could give to my office some time by the end of the week just an update on this, because I have to tell our legislature something. I mean, they have been holding $68 million to support this in a public/private partnership, Federal/State partnership. And, you know, we have got budget constraints like everyone.

FRACKING

My second question is, and Senator Lautenberg alluded to this, we have had a breakthrough, as you know, in this country in finding almost 100 years, I understand, of natural gas reserves. This is terrific. People want to go around saying we have no reserves of oil, which is not true. We have not looked for the oil. I think we have a lot more. But we know how much natural gas we have. The industry has surprised itself at what it is finding.

So, my question is on this fracking issue, what is the Department doing and are you being aggressive to find some conclusions? We think, because we have done this for a while in Louisiana, that fracking is safe under certain circumstances. What are you doing to come to some final determination on this so we can take advantage of 100 years of supply of natural gas, which can reduce our greenhouse gases, I understand, by 40 to 50 percent?

Secretary CHU. Well——

Senator LANDRIEU. If you could do it in 30 seconds or less.

Secretary CHU. Thirty seconds or less. First, we have to establish what is really going on, and it could be different in different regions of the country. And so, that is why the President asked DOE to form this subcommittee. And so, we need to find out what is going on.

Senator LANDRIEU. When do you expect some results or some conclusions from that?

Secretary CHU. We are tasked that 90 days after the first, which is starting today, 90 days from now we will have a preliminary set of recommendations. And that committee—that subcommittee then goes—in that 90 days goes before the full advisory——

Senator LANDRIEU. Madam Chair, let me just say I think that is a very important component of our work in this next year because natural gas is, you know, a 40 percent reduction in greenhouse gasses. We have a 100-year supply. The technology, I believe, is there. I think we are going to find that there is a safe path forward. So, if we could just take a focus on that. And then my time has run out, but I am going to submit a question in writing about exporting natural gas and the pending application you have for southwest Louisiana.

Secretary CHU. All right. Thank you.

Senator FEINSTEIN. Thank you very much, Senator.

Senator Collins.

Senator COLLINS. Thank you.

Madam Chairman, Senator Graham had to leave and asked that he be afforded the opportunity to submit questions for the record.

Senator FEINSTEIN. Absolutely.

Senator COLLINS. Thank you.

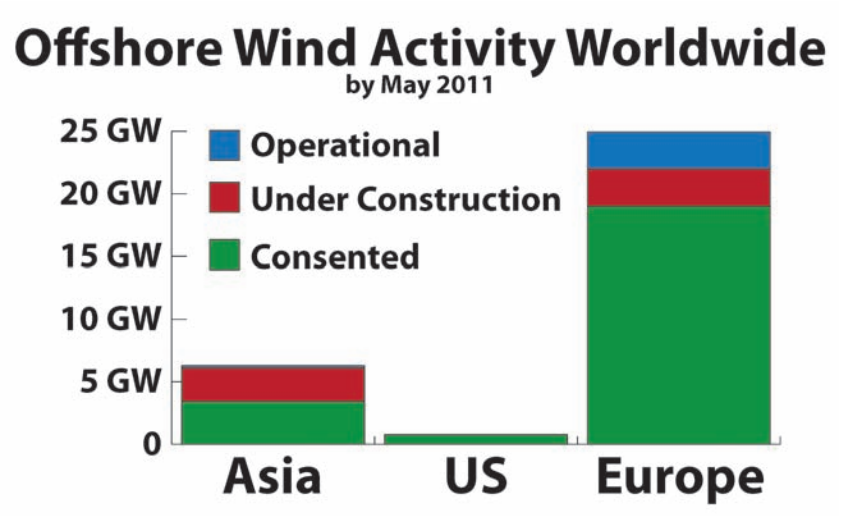
DEEPWATER OFFSHORE WIND TECHNOLOGIES

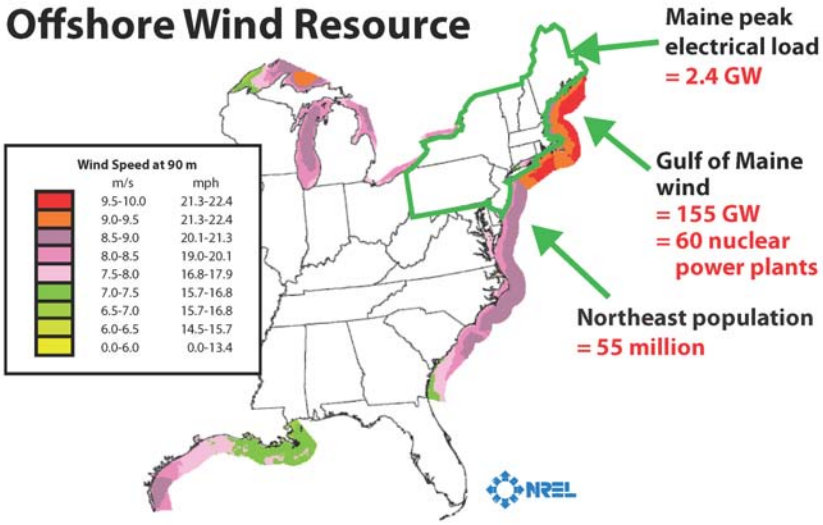
Secretary Chu, it is great to see you again. Let me begin by thanking you for visiting the University of Maine last June to see the very exciting research and development technology that is under way in the area of deep water offshore wind. I would say to my friend and colleague from Tennessee that deep water wind does not face the same challenges as land-based wind, because it can be located out of sight. And the winds are much stronger and more persistent offshore, so you have more energy produced. But there is the need for investment into the technologies, so that the challenges of siting wind turbines in deep water offshore can be met. And I am very excited about the work that is going on at the University of Maine.

To bring the Secretary up to date, a key milestone was reached just this month in which three scale models of floating turbines were successfully tested. And that is providing key data to advance the technology.

But one of my concerns is that our country should not lose the global race in developing deep water offshore wind technology. And if you look at this chart, and I believe the Secretary has it as well, we are losing the race right now. Consented means permitted, for those who are not into the lingo here. But as you can see, Europe is making considerable investments in deep water offshore wind, Asia is as well, while the United States really lags. And yet, this

offers the potential of providing clean domestic energy to large population centers in close proximity to wind resources.





I am pleased to see the investment that the DOE is making. And just for the record, to make sure that I understand the Department that you have submitted, it is my understanding that you just delivered the operating plan for the remainder of 2011 to the Appropriations Committee this week. And it includes funding under the category of Advanced Technology Demonstration Project-Wind Energy. And just to clarify, it is the intention of the Department to do a competitive solicitation for deep water wind energy using some portion or all of that funding?

Secretary CHU. If it is deep water, the answer is yes.

u:\graphics\fy2012\ewmy181.eps u:\graphics\fy2012\ewmy182.eps

Senator COLLINS. And that is the answer I was hoping to hear, so I am pleased that that is the case.

Senator Alexander made a very important point, that we have these technologies that are not going to be able to move forward unless we have a partnership with the Federal Government, with State government, and with the private sector. And I believe that that investment of $26.3 million will help jump start the investment.

I would note that the State of Maine has passed a bond issue and is providing millions of dollars for this as well. And we have also put together a consortium of private companies in Maine that are investing. And we are working with a company that is partially owned by the Netherlands that also is investing in this technology. But it really is very exciting.

Can you give me some idea of what the time table for putting out the solicitation for that $26 million is?

Secretary CHU. I would need to get back to you on the details of it, but we hope it is soon. Again—see? This is really good. You are on a roll—in a couple of weeks.

Senator COLLINS. That is also great news because I think it is important that we move forward.

Secretary CHU. I think the best news is Senator Alexander actually said a kind word for wind.

Senator COLLINS. Believe me; that made my day. I sent him a little note.

Secretary CHU. Because I read his book.

Senator COLLINS. I mentioned that there is a consortium in Maine; it is called the Deep Sea Wind Consortium, which is led by the University of Maine. But it is a broad-base collaborative effort that involves 35 partners, including the State of Maine, academic institutions, nonprofits, utilities, and industry leaders. And what we have found is that kind of collaborative interdisciplinary approach is absolutely essential when you are trying to spur innovation further.

When there are a lot of Federal agencies that are involved in the effort to jump start offshore wind, and I am hoping that we can see a similar collaboration among the Federal agencies and departments that are involved so that we can avoid duplication and maximize efficiency, and stretch those resources.

Could you share with us how DOE is working, particularly with the Department of the Interior, which has some permitting responsibilities, but there are other Federal partners as well, like NSF, the Fish and Wildlife Services.

Secretary CHU. Yes. I think because these are, you know, largely going to be in Federal waters that is the Department of the Interior's jurisdiction, that they are very supportive of this. But, of course, you know, you have to go through the necessary requirements because of exactly what you said there, you know. There could be environmental concerns, and you have to make sure that you examine them in a thoughtful about them.

But I think there is a general acknowledgment. If you can get the technology to work and that is an if and so is the research. The opportunity for offshore wind and deep water wind is there. It is closer to population centers. It is steadier, and the siting problems

are not as great as long as, you know, environmentally we make sure that that is okay. So, the opportunity is great, but it is one of reliability and technology.

And again—and so that is why we chose to shift the research. We think onshore wind is a mature technology. And so, to focus on the more innovative aspects and that is why we repositioned the program.

Senator COLLINS. Thank you, thank you for your efforts, and thank you, Madam Chairman.

Senator FEINSTEIN. Thank you very much, Senator Collins.

Senator COLLINS. Thank you, Senator Alexander.

Senator FEINSTEIN. Senator Murkowski.

Senator MURKOWSKI. Thank you, Madam Chairman. And Secretary, welcome. Good to see you as always.

I have a whole laundry list of questions, and many of them are questions that were asked of you at the hearing before the Energy Committee back in February—February 16. And I did not have an opportunity to ask all of the questions, and so we submitted them for the record to be received in writing. We have not yet——

Secretary CHU. Really?

Senator MURKOWSKI [continuing]. Received those responses, so I wanted to alert you to that because some of the questions I am going to ask you now are hopefully ones that you have already asked and they are in the mail. But if I can just let you know that we are still awaiting some of those.

Secretary CHU. I apologize for that. We were trying to get our system to be more responsive and quicker, but I will look into that.

Senator MURKOWSKI. Well, we will look forward to receiving them.

GEOTHERMAL FUNDING

I wanted to ask you just a little bit about the budgets increase for geothermal. Your budget calls for an increase in funding. It is actually a tripling in funding from $101 million—to $101 million from existing $43 million. Kind of pleasantly surprised me because I am a big advocate of geothermal and what we can do with that resource.

But the question to you this morning or this afternoon is whether or not the Department will be able to spend this out in a timely way. We have, and you have been updated on this, but we have been dealing with a project in NecNec, Alaska, an enhanced geothermal project that we feel has great prospect, great hope, and we are really encouraged about it. It is exactly what the Department has supported in the past. But the sponsors have had just a nightmare of issues in dealing with your Golden Field Office.

Now, some of the issues have come about because of things that the sponsor was involved with. But if you are able to secure money in the budget for the geothermal component, what assurances can you give us that the Department is able to get these dollars out into the field in a timely manner so that we can move these technologies?

Secretary CHU. I think it was remarked already before, we use—we have an existence proof that within DOE and within the Federal Government, you can create a funding organization that is

nimble, that is thorough, that has the high standards of review processes, and that is RP. And we are now focusing very quietly on getting that way of doing business out to the rest of DOE. There are pockets where it is very good, and there are pockets where it is less good. And so, we are very committed in order to get these processes moving in a much more efficient way. And, quite frankly, it would improve the way we do things.

And so, I will look into this because what we are finding is sometimes we have a field office that is almost in competition with central headquarters, and then all of a sudden, the Freedom of Information Act, they start to debate what is going on.

Senator MURKOWSKI. Well, I am glad that you recognize that because that seems to be the sense that we have as we are working with constituents on this. So, if you can look into that. But again, from the bigger perspective, we want to make sure that if these dollars are directed this way that actually they are being translated out into the field.

YUCCA MOUNTAIN

Let me ask you about nuclear and section 302 of the Nuclear Waste Policy Act that requires the establishment of the Nuclear Waste Fund, collecting fees from the utilities, and contained within that—the act, it expressly identifies Yucca Mountain as the sole permanent repository. And it further directs you as the Secretary to propose an adjustment to the fee that is collected from the utilities if the amount collected is insufficient or in excess of the amount that is needed to meet the costs of construction.

So, given where we are with the attempted withdrawal of the Yucca Mountain license application, do you believe that the fees that are collected and deposited within the fund are in excess of the amount that is needed? Do you think an adjustment of the fee is in order? Where do we go with the collection of fees given the status right now in Yucca?

Secretary CHU. Well, you are right. The status of Yucca is yet to be determined. It is in the Nuclear Regulatory Commission (NRC) and also in the courts. But regarding the fee, we still have a responsibility to deal with their spent fuel.

And again, a draft recommendation from the Blue Ribbon Commission is we do see a need for—they have suggested—again, it is just a draft, but they have suggested both interim storage sites and also—but eventually as—again, it is going to be dependent on the technology going forward at interim storage sites, but there will be an eventual time if we develop the technologies—recycling—that after that there would need to be a permanent waste disposal site, and most likely underground.

Senator MURKOWSKI. Understanding all that, but insofar as what is happening right now with the collection of the fees——

Secretary CHU. Right.

Senator MURKOWSKI [continuing]. Is the Department, are you as the Secretary, looking at whether or not an adjustment might be appropriate, given the fact that you have this withdrawal that is pending?

Secretary CHU. Right. We have looked at it, and I think your question, if I would rephrase it is, okay, right now it is in limbo.

That does not mean that going into the future we have this responsibility. We do have this responsibility.

Senator MURKOWSKI. We do, yes.

Secretary CHU. And because of that, if we—I think it would be unwise to say, okay, for the next 5 or 10 years no fee until we have a plan going forward, have a slow steady—but we will need to—but it is, you know, it is a virtual bank, if you will, as you well know.

Senator MURKOWSKI. Well, and I think the frustration has been that, well, if there is a plan in place, I can understand why I should be depositing fees. But if there is no plan, you are just asking for a collection of fees that seemingly is not going to go anywhere. I understand and I think you and I both agree we have to deal with the repository issue. But I think you can also understand some of the frustration that the utilities have out there.

I am over my time. I thank you, Mr. Secretary. Thank you, Madam Chairman.

Senator FEINSTEIN. Thank you very much, Senator Murkowski.

Senator Murray.

OFFICE OF ENVIRONMENTAL MANAGEMENT BUDGET AND NUCLEAR CLEANUP

Senator MURRAY. Thank you very much, Madam Chairman. Secretary Chu, welcome to the subcommittee, and I am sure that you and everyone else in this room today knows what I am going to ask you about, obviously Hanford Nuclear Reservation in my home State of Washington.

As you well know, Hanford is the largest Federal nuclear cleanup site in the country, and it is part of the larger complex that is run by the Department's Environmental Management program.

When you go back through DOE's lineage, the Department actually was created to manage nuclear activities, and the Federal Government has a fundamental and legal responsibility to clean up the contamination that has been left behind by our Nation's nuclear weapons production activities.

So, I am concerned that that this administration does not seem to take these legal obligations seriously because I look at the budgets and see that you continue to increase programs that do not have any legal obligations associated with them, but the Office of Environmental Management (EM) remains largely flat. And I do not think I am the only one of my colleagues on the subcommittee that is concerned about that.

So, I wanted to ask you today, what is your plan to increase the EM budget to meet our legal commitments on cleanup?

Secretary CHU. Well, first, because of ARRA, and as you well know, with your help and others the clean-up program received an additional $6 billion in ARRA. Thanks to this additional funding, we feel that we can meet our legal commitments in 2011–2012, not only in your State, but in Tennessee, in South Carolina, and in other States.

Beyond 2011–2012, we will need to look at our budget requirements. With our current budget request we feel comfortable through 2012. What is going to happen to our 2012 budget, which is what this hearing is about, is a real question. And, you know,

we put in a request in 2011, and in 2011 we did not get the full amount of that request in the continuing resolution. And so, we have to make adjustments.

I think all the States that have nuclear waste concerns, are very concerned about this as well. I think you were not here, but Senator Alexander said that Tennessee has nuclear concerns. They have a higher density of population. There are not only nuclear concerns there are also mercury waste concerns there as well.

So, what we need to do is try to make the best technical assessment of the things that have the highest risk and remediate the risk in the most efficient way possible. That is where we are.

EM has done a very good job in a number of projects that are ahead of time and ahead of budget. However the waste treatment plant is at risk for going over budget, so we have diverted additional funds to the waste treatment plant so that we can——

Senator MURRAY. Well, let me get into that for just a minute—in just a minute. But overall, the only legal obligations that your Department has are for nuclear weapons cleanup and waste storage. And it is disappointing that we have to fight the administration year after year after year to meet those legal obligations. I am sorry I missed your testimony; I had another obligation. But I did read it and it highlights significant increases in a lot of other program offices, including those without any legal obligations. And so, it is troubling to see the EM budget, which is the legal obligation, continue to struggle, and the Department is asking for funds for other programs. So, I will ask you about some specifics.

I appreciate the work that the Department has done on the waste treatment plant and its use of independent reviews, like the construction project reviews. However, I have to tell you I am concerned about the singular focus on the waste treatment plant. I have been very clear with you and everyone in the Department and in the administration that if the administration intends to move forward with the proposed modified funding profile for the waste treatment plant, the only successful way to achieve that is for the administration to increase funding for the entire EM program to make sure that we meet the legal obligations across the complex. And to be very frank with you, I just do not see that happening in you keeping up your side of the obligation.

The waste treatment plant is a priority, but we cannot increase funding for that and decrease funding for other legal obligations to meet that proposed funding level. So, that is my question to you, is how are we going to meet all of those legal obligations? The only way to do it is to increase the entire EM budget.

Secretary CHU. Well, yes. As I said, because of ARRA investments, we will be meeting our legal obligations in the coming couple of years. After that, there is a concern and I will be honest with you there. But also, the President put in a large increase in the Energy budget in part because of the nuclear security issues, but also in large part because we think that the investments in the R&D and some deployment activities will position the United States for future prosperity. Yes, we do not have legal obligations there, but I think we have to make these calls as to what would be in the—with whatever funds the Congress gives us, what would be the best——

Senator MURRAY. But I do not see how you can say, well, we cannot meet our legal obligations, but we are going to increase funding elsewhere in DOE.

Secretary CHU. Well, as I said, because of ARRA and the $6 billion——

Senator MURRAY. Well, and we are talking about fiscal year 2012 and beyond.

Secretary CHU. No, fiscal year 2012, I think we will be meeting our legal obligations. And then after that, it again depends on what the budgets are going to be. The legal obligations of our waste legacy, our cold war legacy, is something which is, quite frankly, the third-largest Government liability. This could be hundreds of billions of dollars. And we need to develop a plan going forward, not just for me, but my successors, on how do you meet these liabilities. And, again, this again goes back to how to best spend that money. And so, in order to meet these obligations in the limited budget scenario, there are ways that we can do our business better in EM.

Senator MURRAY. Mr. Secretary, it has to start with the request from DOE stating this is our priority, we have to meet our legal obligation, and this is what I expect your Department to do, and that is why I am disappointed.

But I have to say that it is a legal obligation. It is a moral obligation. It is a real obligation. We have waste at our nuclear facilities that is leaking toward the Columbia River, and we expect your Department to let the Congress know what the obligation is and how we meet it within your budget. And that is what I am requesting.

Secretary CHU. All right.

Senator FEINSTEIN. Thank you very much, Senator Murray. And I am going to begin a second round, and you might just want to stay for this first question.

SPENT NUCLEAR FUEL STORAGE

I have become very interested in the nuclear fuel cycle, particularly following Daiichi. We have 104 nuclear power plants in this country; California has 2. To my understanding, we have around two dozen plants that are of the same model as the boiling water reactors at Daiichi. Now, when others have said, we have better technology, Daiichi comes back and says, well, we upgraded ours to meet that as well.

In looking at the two nuclear power plants in California, and particularly the spent fuel part of it, which is what Senator Murray is really referring to in a sense, the fact that these spent-fuel pools are really, to some extent, fallible. They are restacked. They can have large numbers of rods in them. In our State, they are kept there for as long as 24 years. The ranking member and I had the head of the NRC, Mr. Jaczko, before us, and he said, well, this is good for 100 years. Candidly, I do not know how anybody knows that this stuff is good for 100 years.

What I also saw were the dry casts and the transference of the rods into the casts. When I asked questions, I was told, well, these casts were specially built for transfer to some form of repository.

I have really come to my own conclusion that the way we best protect Americans is by having some regional facilities where the

storage of nuclear waste can be done over the hundreds of years, supervised by the Government. Otherwise, who knows what Mother Nature will bring down? I mean, I never remember funnel clouds in the Pacific. I never remember the level of hurricanes that we have had. Now, last night, the television said a tornado may be on the ground in a part of Virginia, so who knows what might happen?

I am very concerned that we really need to pay attention to spent fuel and what happens to it. I have caught you unaware, I am sure. But if you have any comments on this subject, I certainly would appreciate hearing them.

Secretary CHU. Well, okay, I think regarding the spent fuels, certainly the accident at Fukushima Daiichi is something that we are paying and the NRC especially is paying a lot of attention on. Again, it is in NRC's jurisdiction, but there is—it is certainly true that when you have a pool of spent fuel with water that it is a higher risk than dry cast storage where you have just natural air circulation. You do not have to worry about something that could breach the pool and things of that nature. It is just very passive, and it is more robust.

And so, certainly I will transition to that so-called dry cast storage is something that I anticipate will be happening. That is, I think, one of the recommendations—the preliminary draft recommendations of the Blue Ribbon Commission, you know. I do not want to second guess what the NRC is going to—going to be doing about this, but certainly it is something that they are saying, yes, that there will be a number of interim—interim being these dry cast facilities in the United States, and I believe that is one of their recommendations, at least in draft.

Senator FEINSTEIN. Good. Good. I was very impressed with the testimony of a Dr. Moniz, M-o-n-i-z, from MIT—on the subject.

LOAN GUARANTEE PROGRAM/CREDIT SUBSIDIES

Let me go to one of my favorite issues, your renewable loan guarantee program. I believe you have just $200 million in the budget for that and that you have sent letters to 50 renewable energy developers who had applied for loan guarantees saying their applications were on hold because DOE believed these would have difficulty making the September 30 construction start requirement.

I do not know how we developed wind and solar power without a very aggressive loan guarantee program. Really, I thought we had it, and putting these projects on hold with so little in your budget really concerns me because I do not know anybody that can do it without a loan guarantee.

Secretary CHU. So, the reason we looked at this has to do with the fact that if you did not have it at a certain time—a conditional loan that goes through the approval process, that you have conditions that would have to be met, and then you would actually have to start on the project before September 30.

And so, we looked at the portfolio of our projects. We could, with these conditional loans, see that we could use the remaining funds. But we did not think it would be fair to those companies to continue investing in this knowing that as we approach this September 30 deadline where they still would have to do other

things—they would have to secure the 20 percent funding, there would be other conditions, and each loan was different. So, we felt that it would not be fair to say, so it is put on hold until there is a path going forward and whether it is going to be continued funding.

We have asked for continued funding. I know that Senators Bingaman and Murkowski are looking at other mechanisms for financing these things. And I am supportive of a capital loan program and want to work with the Congress on that.

Senator FEINSTEIN. Well, thank you very much. We will see what we might be able to do, and we will certainly consult you.

So, I have to excuse myself. Senator, I am going to speak on the floor for the nominee that the vote is pending on at 4:30 p.m., so may I turn it over to you, and you can go full bore.

Senator ALEXANDER. I will go for it.

Senator FEINSTEIN. Thank you.

Senator ALEXANDER [presiding]. I will just have a couple of questions. I was going to follow up on Senator Feinstein's about the loan guarantees. Since nuclear power produces 70 percent of our carbon-free electricity, and renewable—and other renewables produce a few percent, why should nuclear power have to pay for its loan guarantee subsidy and wind and solar not be?

Secretary CHU. Well, because there was a—somewhat before my time, but the reasoning was that nuclear power is a more mature technology. Also fossil fuel has to also, in the 1703 program, have to pay for their credit subsidies, and that the nuclear loans actually should get lower credit subsidy scores. I mean, the first one, the one we did do with Southern and others had a, you know, a pretty modest grade subsidy. And so, but it was felt that because it was a more mature technology.

Now, you know, things have changed, and so——

Senator ALEXANDER. Well, did you just testify that wind was a mature technology?

Secretary CHU. Wind is a mature technology, and if we are going to fund—well, it is a mature technology in the sense that if we are going to fund and research and develop it, we would rather fund research and development it in offshore wind and, particularly, deep offshore wind.

Senator ALEXANDER. Well, I am all for offshore wind research and development, but I am just wondering if wind is a mature technology and it produces a puny amount of intermittent power, why you give it, in addition to paying for its loan guarantees, why you pay for its loan guarantees and not pay for nuclear power's loan guarantees.

Secretary CHU. Again, well, first, you know, we are——

Senator ALEXANDER. It is not as if we are building a lot of nuclear plants right now. I mean——

Secretary CHU. Right. So, we have put in a request for research in nuclear energy, which I am very pro for. And so, I think that to be—but regarding the loans, for example, again, if you look at the companies that before had been putting forward loan applications, they have the assets and things that one could actually say that they—and there is not as much of a structure for the deployment of wind. And as that goes forward, I think, you know, we——

Senator ALEXANDER. Well, Mr. Secretary, there is a 2.1 cent subsidy for all——

Secretary CHU. Right, right.

Senator ALEXANDER [continuing]. The wind power produced in the country, which is costing taxpayers $26-plus-billion just over the next 10 years. And you do not have anything like that for nuclear power.

Secretary CHU. Yes and no. I mean, I think there is no production tax credit, for example.

Senator ALEXANDER. Right.

Secretary CHU. I agree with that completely. But, you know, the people who are against nuclear feel that there are other things that the U.S. Government does for nuclear. And so, gosh, I thought you were pro wind.

SMALL MODULAR REACTORS

Senator ALEXANDER. I am pro research, including offshore—the offshore wind. Let me ask you one last question, and then we will conclude. You have a request in your budget for research for the small modular——

Secretary CHU. Right.

Senator ALEXANDER [continuing]. Reactor, which I know you—is a priority of yours. My question—and it is of mine, and it is of many, many people. It looks like it could be an opportunity for the United States, given our experience with small reactors with the Navy that these could be reactors that we could build here, sell here, lead the world in building, and they would be cheaper. And so, there is a nice scenario ahead of us for Small Modular Reactors (SMR) perhaps.

So, my question is, is the amount of money that you have requested for this year, what will that permit you to do, and, two, are you set up—are you organized to learn anything from the United States Navy and its experience since the 1950s with small reactors?

Secretary CHU. Okay. So we preliminarily requested a large fraction of that would be to help firms complete their engineering designs for NRC approval so they can go forward. There is another fraction of, a smaller part, that would be for essentially research and development that could complement what is being done in the history books.

We feel that if there are things that—you know, if industry can invest in the research and do it, you know, we would like them to do it, but if there are other things——

Senator ALEXANDER. Well, part of your money, if I understand it, goes to pay for things that the NRC would normally pay for. I mean, you are helping them pay for some of their work, is that right or wrong?

Secretary CHU. No. It is actually to help the companies complete engineering design that NRC would require of them.

Senator ALEXANDER. Okay.

Secretary CHU. Okay. So, it is really to help the companies complete engineering, just as we help with the AP1000 engineering design. Now, we do have a lot of experience. The companies, like BMW and others, that have participated in the nuclear—Navy—

certainly have experience in there, certainly one of the companies that want to go forward and try to get licensing from the NRC.

It is a very different type of reactor. The Navy reactors are highly enriched uranium reactors. The newest generation will be designed so that they last the whole life of the summer in 40 years, a very high-performance reactor. As Admiral Donald said, when I first time boarded it at DOE, I asked him, you know, can we use your experience with nuclear reactors in the Navy, and particularly the summer E-fleet, because this is an SMR in the civilian fleet. And he kind of looked at me and said, you cannot afford my reactors. They are very high-performance reactors.

But there are things that do leak over, and some of the companies that build the Navy reactors are—want to go forward with the licensing. The most critical thing, again, is we are looking at what can we add value to to help industry move along in a path that we think is important. But as I think we both agree, that SMRs are a totally different model for how to drive up safety, drive up the effectiveness and drive down the costs and to recapture the nuclear lead. And so, that is why I have been out in front and pushing SMRs. I think it is an opportunity—very different because the economy of scale of building a very large one—you know, 1,000 to a 1,500 megawatt reactor, because of all of the fixed costs of siting and licensing and everything else.

Now, you build an assembly line plant that you can ship not only anywhere in the United States, but anywhere in the world. And you can—and then you can right size the generation to the transmission infrastructure at that site. So, it is a very different model, but it means that you have to be able to essentially mass produce these reactors with that economy of number.

You know, it is not proven that we can do this, but we think that there is an opportunity there, and we were also trying to engage with industry and the right economic models to do this so that—the utility companies—and it also, it is bite sized. If you have to spend $8 billion they think very hard about that because you are spending a large fraction of the company assets on this next project. If it were delayed a year or two, that would have financial consequences. When it is a factory-generated thing, a lot of those things go away, because you can stamp them out. And so, the uncertainties and delays in schedules, there is another real opportunity. It takes away a lot of the uncertainty people might have about the industry.

NUCLEAR FUEL RODS AND DRY CAST STORAGE

Senator ALEXANDER. Senator Feinstein mentioned before she left that the Chairman of the NRC has said that in their judgment, used nuclear fuel rods could be stored safely for up to 100 years. Do you have any reason to disagree with that?

Secretary CHU. I think the fuel rods and dry cast storage is a determination the NRC has, and what I know about it, that appears to be correct. Different than spent fuels and wet storage because of things we saw in Fukushima. I do not think the NRC said that spent-fuel pools were, you know—you want to go to dry cast storage.

Senator ALEXANDER. No, I think he did.

Secretary CHU. Oh, he really did?

Senator ALEXANDER. Yes. I mean, well, there is nothing inherently—I mean, the problem is, as long as you have electricity and water, your spent-fuel pool should be perfectly safe, should they not?

Secretary CHU. Well, I do not want to contradict Chairman Jaczko.

Senator ALEXANDER. Well, I do not want to misrepresent him either, so maybe I——

Secretary CHU. So, I will——

Senator ALEXANDER. Maybe I heard him wrong. But the—in the first place, you cannot put these rods in the dry cast storage immediately, is that correct?

Secretary CHU. That is correct.

Senator ALEXANDER. It takes several years before they are cool enough to put into dry cast storage.

Secretary CHU. That is correct. I think——

Senator ALEXANDER. During that time, you have no reason to think that they are in a——

Secretary CHU. No.

Senator ALEXANDER [continuing]. In a dangerous condition when stored under NRC regulations on site.

Secretary CHU. Right. No, I agree with Chairman Jaczko on that, that, first, you are absolutely right. For the first 5 or 6 years, they are too hot to be air cooled. And the way, as I—actually, the way these spent fuels—we have backup systems in case the main water supply is interrupted there. There is secondary piping and things of that nature.

Senator ALEXANDER. Well, there are second, third, fourth, and fifth redundancies. Well, I mean, I went to Watts Par with one of the commissioners recently, and I asked the question, I mean, if one—if the backup electricity system goes down, there is another electricity system, and then there is another one.

Secretary CHU. Right.

Senator ALEXANDER. And then there is finally a way to get water in even if all of it goes down.

Secretary CHU. I think that is absolutely what we need.

Senator ALEXANDER. So, there is enough water—if there is enough available water, the fuel rods would be safe, is that not right?

Secretary CHU. Right, right. And so, you know, can I be 100 percent guaranteed that nothing would—no, but I think there are these backup systems that I feel safe about, okay? And so, I would, but without trying to contradict NRC and Chairman Jaczko, I think dry cast storage, if you do not have water, you do not have that. It would be more robust, but that does not mean that the current storage system is endangering Americans.

Senator ALEXANDER. Okay. Well, thank you, Dr. Chu, for coming today.

ADDITIONAL COMMITTEE QUESTIONS

At this time I would like to ask the subcommittee members to submit any additional questions they have for the Secretary.

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

QUESTIONS SUBMITTED BY SENATOR PATTY MURRAY

ENVIRONMENTAL MANAGEMENT

Question. Mr. Secretary, in your oral testimony you mentioned the need to find ways to do business better when referring to Environmental Management. I've been pleased to hear about site wide management for infrastructure and support services at Hanford.

Please tell me how this new approach is working and whether it would be beneficial at other sites across the Department of Energy (DOE) complex.

Answer. The Department's purpose for the creating a Mission Support Contract (MSC) was three-fold:

—to make it possible for multiple contractors (which is why the MSC concept is particularly well-suited for the Hanford site) to focus on performing their different short- and long-term environmental clean-up mission;

—to create a scalable infrastructure that can shed excess capacity and its associated costs over time as the clean-up mission progresses; and

—to provide efficient and effective delivery of infrastructure and site services in support of the clean-up mission.

DOE developed an aggressive and comprehensive Performance Measurement Evaluation Plan (PEMP) that assigns all award fee to specific strategic outcomes of the contract. To date, MSC at Hanford is achieving the three objectives established for this acquisition. Since the start of the contract period in August 2009, the MSC has increased service responsiveness to the clean-up mission by implementing benchmarked service standards and a broad range of service performance measures that obtain feedback from the clean-up contracts regarding costs, effectiveness, and quality of services provided. Thus far in the contract period of performance, the MSC has greatly increased the scalability of the IT infrastructure and leads the DOE complex in innovation and efficiencies in this area. Currently, the MSC is increasing capacity where required to support the operation of the Waste Treatment Plant. Award fee was assigned to the development of an Infrastructure Services Alignment Plan to provide a comprehensive plan developed in cooperation with other Hanford Site contractors for the realignment of the existing infrastructure to meet the future needs of the clean-up mission.

It was anticipated early in the development of the acquisition strategy that this approach, if successful, would be a strong candidate for implementation at other Environmental Management (EM) sites.

The primary assumption that a mission support contract would enable more focus on the part of the site contractors tasked with the clean-up mission (since time of award in 2009) has been proven valid and it is felt that with the experience gained, the Department is in a prime position to leverage this strategy across the EM complex.

Question. Secretary Chu, obviously both you and I would like the fiscal year 2012 budget request of $6.1 billion to advance through the appropriations process to ensure that the Department can meet its legal commitments.

However, in the event that the Congress does not enact an Energy and Water Development appropriations bill by September 30, can you please tell me how the Department would determine interim funding levels for the EM program?

Answer. We are hopeful that the Congress will complete work on the 2012 appropriations bill by September 30, 2011, and do not want to speculate about hypothetical future scenarios.

Question. If the Department uses the fiscal year 2011 final year-long continuing resolution as a base number going into fiscal year 2012, what will the impacts be at each site in the EM complex in terms of work scope, regulatory compliance milestones, and jobs?

Answer. We are still analyzing the effects of the 2011 funding levels and do not want to speculate about hypothetical future scenarios.

LOAN GUARANTEE PROGRAM

Question. Secretary Chu, I appreciate your leadership in getting the Loan Guarantee program up and running and commend you on efforts made thus far, including 28 conditional commitments for loan guarantees.

I understand that last week, the Loan Programs Office sent letters to all pending section 1705 loan guarantee applicants, indicating that DOE was either putting projects "on hold" or moving them through the section 1705 process.

I know that most of these companies have spent significant amounts of both time and money to prepare their applications and to comply with due diligence requirements, and I am very concerned that a large number of companies who have already spent a lot of money are facing a very uncertain path forward.

Can you please tell me how many applicants were in each category—"moving forward" versus "on hold"?

Answer. The Department notified 17 applicants that their applications were moving forward and notified 42 applicants that their applications are on hold.

Question. Of the applicants that were moved forward, did the Department include any companies, including affiliate companies, with more than one application pending in the section 1705 program?

Answer. The projects we support are large and complex, and each one involves multiple parties, including developers, sponsors, EPC contractors, equity participants, advisors, and—in Financial Institution Partnership Program transactions—other lenders. Sometimes, on a given project, the same entity (or its affiliates) may play more than one of these roles. There are entities that are involved, in some capacity, in more than one of the projects that were moved forward under 1705.

Question. If so, how many of those companies or their affiliates have one or more applications pending? How many applications for each of those companies are moving forward?

Answer. As discussed above, given the many roles that exist in the context of each project, it is difficult to provide a precise number in response to this question.

Question. Have any of the companies in the "moving forward" category already been approved for a loan guarantee under the section 1705 program?

Answer. There are entities involved in the "moving forward" category that are also involved in other projects that have already been approved for a loan guarantee under the section 1705 program.

Question. What are the specific criteria the Department used to determine which letter—again, moving forward or "on hold"—an applicant received?

Answer. The Department based its decision on an application's readiness to proceed. Specifically, we identified those projects most likely to be in a position to reach financial close and commence construction by the 1705 program's congressionally mandated September 30, 2011 expiration date. These projects received "moving forward" letters. All other 1705-eligible projects in our pipeline received the "on hold" letter. It was important to notify these companies that we do not expect them to receive a loan guarantee under the 1705 program as soon as possible, so that they could avoid spending further time and resources unnecessarily.

Question. What is the likelihood that one of the remaining section 1705 applicants is not able to meet the program's equity requirements?

Answer. As is always the case, there can be no guarantee that any given project will ultimately receive a conditional commitment or, if it does, that it will meet all conditions precedent to financial close in a timely manner. That said, DOE's decision to move forward with certain projects was based on our analysis of the project's ability to meet our programmatic requirements by the September 30, 2011 sunset date.

Question. If such a situation occurs, what is the Department's plan to ensure those funds are made available to otherwise qualified applicants whose applications were put on hold?

Answer. DOE determined that the projects placed on hold were unlikely to reach financial closing by the program's September 30, 2011 expiration date.

Question. How will the Department determine those pending applications (that have been put on hold in the section 1705 program) which will be eligible to access the $170 million in credit subsidies appropriated in the fiscal year 2011 year-long continuing resolution under the section 1703 program?

Answer. We are currently working to develop a process for implementing this new provision.

Question. What is the Department's plan to quickly and efficiently move those section 1705 applicants to the section 1703 pool?

Answer. Pursuant to the fiscal year 2011 continuing resolution, some of the projects with active 1705 applications (including those put on hold) are eligible for the section 1703 program (most of these projects would have been eligible for 1703 in any event, provided they satisfy certain restrictions in the applicable budget authority). Projects eligible for 1703 will not need to submit a new application to be considered for a guarantee under that program.

Question. Will this information be made available to the Congress and the applicants?

Answer. The Department will continue to ensure that applicants and the Congress are appropriately informed of programmatic developments.

Question. How many companies are currently in the application pool for the section 1703 program?

Answer. DOE currently has approximately 20 active applications from projects that are eligible for the 1703 program, but not the 1705 program.

Question. How will the transfer of eligible applications from the section 1705 program affect the current section 1703 program?

Answer. There will be significant competition among qualified applicants for the appropriated funds under 1703.

Question. What criteria will the Department use to determine how the $170 million in credit subsidies will be distributed among the new pool of section 1703 applicants?

Answer. We are currently working to develop a methodology for implementing the programmatic changes and appropriations included in the fiscal year 2011 continuing resolution.

Question. What is the Department's commitment to the Loan Guarantee program for renewable energy projects going forward?

Answer. The Department is committed to the Loan Guarantee program which aims to accelerate the domestic commercial deployment of innovative and advanced clean-energy technologies at scale. Under the 1705 program, DOE has issued loan guarantees for 28 projects representing more than $16 billion in loan guarantees for projects that will create more than 16,000 direct jobs.

WATER POWER PROGRAM

Question. Secretary Chu, I like what you have said about hydropower being an "incredible opportunity", our "lowest cost, clean energy option" and your comments about adding this resource to our clean-energy portfolio. And as you know, marine and hydrokinetic power is a promising source of renewable energy.

Despite your positive comments, you are yet again proposing to cut the Water Power program, as you have every year. In fact, it is only 1 of 2 programs to be cut in Energy Efficiency and Renewable Energy (EERE), which received an increase of $1.4 billion more than fiscal year 2011 enacted levels. I do understand that we are facing tough budget times, but I fail to understand the logic behind your cut of 20 percent to the Water Power program when you have increased the budget for wind, solar and geothermal.

Why isn't the Water Power program more of a priority for the Department?

Answer. The Department remains optimistic about the opportunities to further develop the full range of water power technologies, including emerging marine and hydrokinetic (MHK) energy technologies. Given the current state of MHK development, we believe that the $38.5 million requested for water power research in fiscal year 2012 is sufficient to continue the program's ongoing efforts to advance these water power technologies and accelerate their greater market adoption. We are currently completing a comprehensive set of resource assessments, and undertaking detailed techno-economic assessments of emerging technologies, which will help us to effectively determine the opportunities and costs associated with these technologies. These important analyses will help the Department determine what funding levels are necessary and appropriate to realize water power's potential.

Regarding hydropower—as you know, hydropower accounts for about 7 percent of our Nation's total electricity generation. And you and I have both applauded a recent National Hydropower Association study showing the potential to double existing hydro capacity and create 1.4 million jobs. There's a lot going on in hydro—from low-impact hydro to small projects to increasing efficiency and output at existing projects. And while hydro is a more mature technology than some others, developing technology innovations is still important. As you know, we continuously work to develop innovations in other resources—from automobiles to other renewable energy resources like wind—and I believe we should be doing so with hydro as well.

Question. Would you agree that doubling our hydro capacity is doable, and necessary? What is your plan to make this happen?

Answer. DOE agrees that substantial increases in hydropower capacity, including pumped storage, from a baseline of about 100 GW in 2009 are feasible by 2050. New hydropower development is possible across several different resource types, including:

—capacity upgrades and efficiency improvements at existing hydropower facilities;

—adding power plants at existing, nonpowered dams;

—installing new hydropower power capacity on constructed waterways; and

—new environmentally sustainable hydropower at natural streams.

As most of the traditional concerns over environmental impacts typically associated with hydropower generation can be effectively mitigated through technology improvements and sustainable development practices, these opportunities present a low-cost, renewable energy resource that can help meet the administration's clean-energy economy goals.

The Department has a multi-pronged approach to assist industry in increasing hydropower capacity. We are currently completing a set of resource assessments, undertaking detailed techno-economic assessments of existing hydropower plants, and engaging in research, development, and deployment of emerging technologies. The Department announced a Conventional Hydropower Funding Opportunity in 2011 that will help spur the development of conventional hydropower including pumped storage hydropower. Current Department-funded projects such as the Hydropower Advancement Project and water use optimization project will help the hydropower industry implement best practices to increase power production and assess their plants for capacity and efficiency upgrades. The Department has also funded an innovative "fish-friendly" turbine project, a turbine design that allows fish to safely pass through the hydropower turbine. This will allow industry to install hydropower units at locations where water is otherwise spilled to allow for fish passage.

Question. Regarding ocean and tidal energy, I believe you are aware that my home State of Washington has made a strategic decision to be an international leader in the commercialization of the emerging ocean renewable energy industry. As you know, the United States has significant ocean, marine, and tidal energy resources. Development of the technologies to capture these ocean energy resources can play a significant role in our Nation's economic recovery and expand our renewable energy portfolio.

I strongly support the efforts underway in Washington and am proud of the work being done in my State to capture the jobs that will be created by the design, construction, and deployment of wave energy converters. For example, the University of Washington and Snohomish Public Utility District are working hard to support this new domestic clean electricity generation industry that has the potential to provide up to 10 percent of our Nation's power needs.

Unfortunately, the United States is falling behind in the race to capture the rich energy potential of our oceans, and the jobs that will come with this new industry. Many countries, particularly in Europe, have already deployed viable, operating, electricity generating projects using the emission-free power of ocean waves, currents, and tidal forces. The Ocean Renewable Energy Coalition calculates that more than $370 million US has been spent by the UK Government on wave energy research and development (R&D) over the past several years. That total approaches $500 to $600 million US over the same period if you add in commitments to ocean energy R&D from France, Portugal, Spain, Norway, and Denmark.

Given this competitive situation, I am particularly disappointed with the fiscal year 2012 budget request for the Water Power program

While the Congress has provided increased funding for the Water Power program, I'm disappointed that the Department hasn't been more aggressive in its efforts to help commercialize this technology. We need the enthusiastic support of you and your senior leadership team to help speed the deployment of ocean energy technologies and secure U.S. leadership in this emerging clean-energy industry.

What is your plan to stop the United States from losing these jobs to Europe?

Answer. DOE's Water Power program is building a comprehensive understanding of emerging MHK technologies and facilitating innovation and technology development that leverages previous advancements, including those made in Europe. In order to promote the development of a competitive MHK industry in the United States, DOE's Water Power program is supporting the establishment of three national test centers. These centers are planning to build open-water testing infrastructure, which will allow the developers of MHK devices to efficiently test in a realistic marine environment.

DOE's Water Power program is also developing state-of-the-art technology design tools that simulate the behavior and performance of MHK devices in complex marine environments (covering tidal/ocean current and wave resources). These models will identify key cost-of-electricity drivers, facilitate rapid design optimization, and support detailed techno-economic assessment of MHK technologies as is required per congressional direction. Ultimately, the analytical results provided by these design tools will guide the Department's future investment decisions by identifying not only technology leaders but also the best opportunities to make these technologies cost competitive with other energy portfolio options.

The program recently funded three full-scale MHK demonstration projects, including a $10 million grant to the Snohomish Public Utility District tidal energy project. In funding these advanced projects, the program seeks to demonstrate successful MHK operation and testing in U.S. waters and drive the development of future projects.

Finally, the program is strategically working to remove barriers to deployment by engaging in research that answers questions regarding the potential environmental impacts of MHK technologies and by developing technologies to monitor and mitigate these potential impacts. Collectively, these efforts are strategically aimed at advancing a domestic MHK industry that can contribute to our Nation's clean-energy future.

Given the early stage of MHK development, the Department is taking a very deliberate and comprehensive approach to our investments in MHK technologies. Future investments (Federal and private sector) will spur economic development only if the technologies can be proven to be competitive in the market place. Our efforts to spur such economic development are focused therefore on proving marketplace competitiveness of the technologies, and ultimately supporting the development of a competitive U.S.-based MHK industry that will create green jobs in the United States.

Question. I am concerned that your budget request does not support development of a testing infrastructure in the United States, something that is vital to ensure this industry can move forward. For example, Europe currently has several wave and tidal energy test facilities, including its main facility in Scotland. We clearly have a need for this infrastructure here in the United States, and I know that the Northwest National Marine Renewable Energy Center (NMREC) has a strong desire to compete for funding to establish a testing center in the Pacific Northwest.

Can you please comment on why your budget request does not support development of such testing infrastructure and can you tell me your plan to build it?

Answer. The development of an MHK technology testing infrastructure in the United States is considered vital to helping ensure that the industry can continue to progress toward commercialization. To advance the MHK industry, the Department continues to invest in, and support, three NMRECs. The Northwest NMREC, the Hawaii NMREC, and the Southeast NMREC are important partners in the ongoing development of a viable MHK industry in the United States.

The Department is currently undertaking quantitative assessments of the energy that can be extracted from wave, tidal and ocean current, and ocean thermal energy resources, and is preparing a comprehensive techno-economic assessment of MHK technologies and resources. This information will serve to identify the potential contribution that MHK resources can provide to our Nation's energy mix, and will also point to promising technologies that merit further investment. This information will inform the Department's future investment decisions, including testing facilities.

HYDROGEN AND FUEL CELL TECHNOLOGIES

Question. I understand that the primary goal of the DOE Fuel Cell Technologies program is to advance fuel cells, including those that provide backup power, to be competitive in the marketplace. The market transformation program has been successful in meeting this goal by introducing fuel cells to larger markets and competing effectively in terms of life-cycle costs, performance, durability, reliability, and significantly reduced greenhouse gas emissions.

Given the program's success, why does your budget request zero out the market transformation program, right when it's gaining traction?

Answer. The Department's strategy is to sustain a balanced R&D portfolio, with an emphasis on nearer-term priorities, such as batteries, advanced vehicle technologies, and technologies for renewable power and energy efficiency. Fuel cell electric vehicles (FCEVs) are still part of the portfolio of options under development. In fact, DOE's increased funding for battery R&D will also be beneficial for FCEVs which rely on batteries in addition to fuel cells.

The Department will continue its critical efforts in hydrogen and fuel cell R&D, which have already reduced the cost of fuel cells by more than 30 percent since 2008 and 80 percent since 2002.[1] In fact, DOE's hydrogen and fuel cell program has been extremely successful, resulting in approximately 200 patents, 30 products being put on the market, and industry currently pursuing development of more than 50 emerging technologies.[2] The fiscal year 2012 budget sustains DOE's core R&D ef-

[1] http://hydrogen.energy.gov/pdfs/10004_fuel_cell_cost.pdf.
[2] http://www1.eere.energy.gov/hydrogenandfuelcells/pdfs/pathways.pdf.

forts which will continue to advance the technologies and improve the likelihood of a successful rollout by automobile manufacturers in the coming years.

SOLAR ENERGY TECHNOLOGY PROGRAM

Question. Secretary Chu, your fiscal year 2012 budget request for the Solar Energy Technology program represents an increase of nearly 50 percent more than the fiscal year 2011 budget request, and an increase of 87 percent more than the fiscal year 2010 enacted level. However, your budget request includes only $50 million for the Concentrated Solar Power (CSP) program, and as I understand it, you are proposing an approximately 8 to 1 ratio of funding in favor of Photovoltaics (PV) over CSP.

Given that the United States still co-leads both technologically and commercially in the CSP field, do you believe that the Department should maintain a more balanced funding ratio between PV and CSP?

Answer. The administration's 2011 budget request for CSP included $50 million for a Solar Demonstration Zone which would help validate cutting-edge CSP and other concentrating solar technologies. This was in addition to a base CSP R&D program of approximately $50 million. The administration did not seek additional funding for the Solar Demonstration Zone project in 2012 as it is unlikely that these funds could be fully utilized in 2012 if funds were also provided through the 2011 budget. The request for base CSP R&D for 2012 is consistent with the request in 2011. As part of the 2012 budget request, the administration also announced its SunShot initiative which seeks to reduce the cost of electricity from solar technologies by 75 percent by the end of the decade to be competitive with conventional generation sources of electricity without subsidy. The administration believes this is an ambitious but achievable goal. For 2012, the administration's funding request for the SunShot initiative has been largely designated through the Photovoltaic Research and Development subprogram. We believe, however, that CSP technologies also have the potential to reach the SunShot Initiative goals and are assessing this potential as part of our future portfolio balance.

ADVANCED CABLE AND CONDUCTORS PROGRAM (FORMERLY HIGH TEMPERATURE SUPERCONDUCTING PROGRAM)

Question. Mr. Secretary, your budget request proposes to zero out the High Temperature Superconducting program (recently renamed the Advanced Cable and Conductors program). I understand that your justification is that the program has met its technical milestones. However, as you may be aware, other countries—namely China, Japan, and Korea—are aggressively demonstrating and deploying high-temperature superconducting systems and the United States is not.

Given this, I believe it doesn't make sense for the Department to eliminate this program prior to the demonstration and deployment of high-temperature superconducting (HTS) systems, including advanced cryogenic and cryocooler systems.

Do you agree?

Answer. HTS is an integral part of Smart Grid technologies that can provide for a more reliable, secured and efficient electricity delivery infrastructure. After investing more than $600 million over the past 20 years, second-generation HTS wires in sufficient lengths with good performance can now be produced by U.S. manufacturers. These wires are beginning to be sold around the world, and are the primary components in many international demonstration projects.

With the availability of these commercial wires, the Department's Office of Electricity Delivery and Energy Reliability (OE) believes that HTS wire research has reached a point that second-generation HTS wire technology can be successfully transitioned to the U.S. manufacturing base. While OE is winding down its involvement in HTS wire research, it continues to support several innovative HTS system demonstration projects funded through the American Recovery and Reinvestment Act. These power systems include a grid-scale HTS fault current limiter, HTS power cable, and HTS fault current limiting transformer.

In addition, DOE's Advanced Research Projects Agency-Energy (ARPA–E) is supporting a project to develop an advanced HTS superconducting magnetic energy storage system that will store significantly more energy than current designs at a fraction of the cost. Moreover, I am aware of HTS system demonstration projects that are being performed by other agencies. For example, the Department of Homeland Security is investigating the feasibility of a HTS fault current limiting power cable that can enable connectivity between electrical substations to share power in case of emergencies. And at the Department of Defense, the Navy is developing innovative HTS applications and advanced cryogenic systems for military usage.

To summarize, while OE is winding down its second-generation HTS wire research activities, DOE and other agencies are continuing to support the development and deployment of innovative HTS system applications. By studying the fundamental science of superconductivity, engaging in HTS systems development, and keeping up-to-date on worldwide progress in HTS wires and systems research, DOE will be in a position to take advantage of any significant HTS discovery and innovation.

Question. If the United States eliminates programs that will encourage the demonstration and deployment of high-temperature superconducting technologies, I am seriously concerned that this will be another example of our Nation inventing and developing a promising advanced energy technology, only to lose commercial leadership to other countries, as happened with wind turbines and photovoltaic systems.

Given your focus, and the President's focus, on innovation, can you please tell me your plan to ensure this situation does not happen with high-temperature superconducting technologies?

Answer. Superconductivity is a crosscutting technology that can benefit energy applications in many fields of use. For the past 20 years, the Department has focused its wires research and applications development activities in power delivery systems. With the Department's support, second-generation HTS wires manufactured in the United States are now available commercially and prototype HTS power systems have been demonstrated.

To maintain U.S. leadership in superconductivity, however, fundamental understanding of HTS needs to be obtained and more novel superconductors need to be discovered. In addition, HTS applications other than power delivery systems should be developed to broaden the market and sustain the U.S. manufacturing base. Moreover, a more strategic approach to developing advanced HTS materials and conductors and means to integrate them into a nonsuperconducting Smart Grid infrastructure need to be established.

In the area of basic superconductivity research, DOE's Office of Science Energy Frontier Research Center for Emergent Superconductivity is performing work to discover new superconductors. Furthermore, the Office of Science supports basic research on synthesis, advanced characterization, and theory to understand fundamental phenomena related to superconductivity. To broaden the HTS market, a number of DOE offices are considering the benefits of various applications ranging from light weight superconducting generator for offshore wind turbines to very high field superconducting magnet systems suitable for scientific and medical applications. Moreover, the fiscal year 2012 request for the Office of Electricity Delivery and Energy Reliability includes a Smart Grid Technology and Systems Hub, which can leverage crosscutting technologies and capabilities developed under the superconductivity program to impact this and other energy applications.

The Department believes that the United States will maintain its leadership position in superconductivity by fully implementing the plan to understand and discover novel superconductors, demonstrate innovative and diverse HTS applications to broaden the market base, and develop advanced materials and systems that will integrate seamlessly into a reliable, secured, and efficient Smart Grid infrastructure.

CLEAN RENEWABLE ENERGY BONDS

Question. Secretary Chu, the fiscal year 2012 budget request proposes another 1-year extension of the 1603 Treasury grant program to incentivize renewable energy. As you know, 1603 only applies to private developers and utilities; it is not available to consumer-owned utilities like many of those in Washington State. The Clean Renewable Energy Bond (CREBs) program is available to those municipal and rural cooperative utilities to incentivize renewable resources.

Given that increasing the CREBs bonding level would help the administration achieve its 80 percent clean-energy goal, would the administration support an increase in the CREBs program?

Answer. The administration recognizes the instrumental role that CREBs have played in catalyzing investment in renewable energy by nontaxable entities as a complement to other incentives such as Federal tax credits. Raising the cap on CREBs is one among several policy measures that can encourage investment in renewable energy, which is consistent with administration policy objectives for a clean-energy economy.

QUESTIONS SUBMITTED BY SENATOR TIM JOHNSON

Question. I appreciate the administration's commitment to the research and development necessary to advance renewable energy. Cellulosic biomass has a promising

future for both transportation fuel and power production, and it is important that we understand how much biomass can be produced sustainably and economically for bioenergy. To this end, the Department of Energy (DOE) has supported the development of the Regional Feedstock Partnership, a collaborative effort of Federal agencies, national laboratories, and universities that is now into its third and fourth year of field work.

The DOE budget justification suggests that the United States Department of Agriculture (USDA) will take a lead in sustainable feedstock production beginning in fiscal year 2012. That may be a reasonable approach; however, I have several questions regarding the impacts to the Regional Feedstock Partnership and ongoing research within DOE Office of Biomass programs.

My understanding is that the development of the Regional Feedstock Partnership was reviewed and approved by the Office of Management and Budget. The program has enjoyed bipartisan support and has been included in the administration budget requests for the last several years. In fiscal year 2012, however, the administration proposed to greatly reduce the Sustainable Feedstocks funding account that supports the Partnership.

Is the reason for reducing the Sustainable Feedstocks account due to the intent to shift the lead on biomass feedstocks to USDA?

Answer. On February 3, 2010, The White House issued *Growing America's Fuels: An Innovative Approach to Achieving the President's Biofuels Target*.[3] This document established lead agency responsibility for each biofuel area supply chain segment. USDA was identified as the lead for both Feedstock Development and Feedstock Production Systems, and was directed to coordinate with DOE to enhance the work being conducted by the Regional Feedstock Partnership. In an effort to help align feedstock activities with each agency's expertise and minimize redundant focus areas, the emphasis for DOE feedstock-related funding was shifted to focus primarily on feedstock logistics systems in the fiscal year 2012 budget request.

Question. From your point of view, has the DOE Regional Feedstock Partnership been a success?

Answer. The DOE Regional Feedstock Partnership has successfully established more than 100 biomass energy crop field trials in 39 States through the work of more than 96 university, USDA Agricultural Research Service, and industry scientists. DOE considers the information collected from the field trials to date, as well as the extensive relationships that have been established under the Partnership, to be highly valuable to the Nation's biomass feedstock production efforts. The March 2011 progress report "Regional Biomass Feedstock Partnership Executive Summary" details other Partnership successes to date.[4]

Question. After funding the Partnership for several years, is it an effective use of taxpayer dollars to terminate the program just as the field research results are beginning to come in?

Answer. DOE plans to support the Regional Feedstock Partnership through fiscal year 2013. It was the original intention of DOE to support the Regional Feedstock Partnership for at least 6 years (fiscal years 2008–2013) in recognition of the need for longer-term studies associated with perennial biomass energy crops. These systems often take multiple years to establish, and the full potential of their productivity, as well as potential environmental services provided by perennial systems, cannot always be realized within just a few years. Conversely, field trials for annual biomass energy crops and residues, such as energy sorghum or corn stover, have provided valuable data from the first year they were established.

Question. Would it not make more sense to complete the program for at least the remaining 2 years of this OMB-approved process, in order to get the benefit of the work that has already been done rather than start over and duplicate these efforts through another Department?

Answer. USDA has been designated lead agency under *Growing America's Fuels: An Innovative Approach to Achieving the President's Biofuels Target* for Feedstock Development and Feedstock Production Systems. The difficult aspects of establishing this type of research program have already been addressed, including:

—development of a nationwide network of more than 90 scientists to participate in the Partnership;

—development of comparable field management and data collection protocols for nine different biomass energy feedstocks across five different geographical regions; and

[3] *Available at* http://www.whitehouse.gov/sites/default/files/rss__viewer/growing__americas__fuels.PDF.

[4] Progress report *available at* http://www.sungrant.org/NR/rdonlyres/F374DEB6-810C-4B05-9A21-2 6D6B0576E78/2834/ExecutiveSummary33111.pdf.

—establishment of difficult and costly perennial energy-cropping systems.

These successes will be leveraged by USDA as it takes the lead on feedstock development and production systems.

QUESTIONS SUBMITTED BY SENATOR FRANK R. LAUTENBERG

Question. The United States leads the world in fuel cell patents. Fuel cells can help reduce our dependence on oil and air pollution while at the same time creating jobs. In New Jersey, companies like BASF employ hundreds in their fuel cell divisions. How will the reductions in funding for fuel cell technology in this budget affect our ability to win the clean-energy race?

Answer. The Department's strategy is to sustain a balanced research and development (R&D) portfolio, with an emphasis on nearer-term priorities, such as batteries, advanced vehicle technologies, and technologies for renewable power and energy efficiency. Fuel cell electric vehicles (FCEVs) are still part of the portfolio of options under development. In fact, the Department of Energy's (DOE) increased funding for battery R&D will also be beneficial for FCEVs which rely on batteries in addition to fuel cells.

The Department will continue its critical efforts in hydrogen and fuel cell R&D, which have already reduced the cost of fuel cells by more than 30 percent since 2008 and 80 percent since 2002.[5] In fact, DOE's hydrogen and fuel cell program has been extremely successful, resulting in approximately 200 patents, 30 products being put on the market, and industry currently pursuing development of more than 50 emerging technologies.[6] The fiscal year 2012 budget sustains DOE's core R&D efforts which will continue to advance the technologies and improve the likelihood of a successful rollout by automobile manufacturers in the coming years.

Question. In response to high gas prices, some have suggested we need more offshore drilling with fewer safeguards. The Energy Information Administration found that opening all of the offshore areas in the lower 48 States would lower gas prices by just 3 cents per gallon—decades from now. How will the President's budget invest in real solutions to high gas prices?

Answer. Even while committed to safe and responsible domestic oil and gas production, the administration has taken steps to improve efficiency across the entire transportation sector and to develop and expand alternative fuels, including advanced biofuels. Energy innovation will increase the potential for the replacement of petroleum. Therefore, the administration's budget provides increases for programs, such as the Advanced Research Projects Agency-Energy (ARPA–E), that support energy innovation. The budget helps advance the goal of 1 million electric vehicles on the road by 2015 including through a shift from the existing tax credit incentive to a rebate that would be available to consumers at the point of sale and a $588 million investment in research, development and deployment programs for advanced vehicle technologies. It also proposes $341 million for biofuels and biomass R&D within the Office of Energy Efficiency and Renewable Energy, including a new reverse auction to promote advanced biofuels across the country.

Question. The Princeton Plasma Physics Laboratory in New Jersey carries out research that could lead to major innovations in energy technology and help make the United States a world leader in clean-energy technology. One area of research is developing energy from fusion. A breakthrough in fusion energy could be the solution to the world's energy problems by providing the planet with a safe, clean, and limitless supply of energy.

I support a significant increase in funding for the Plasma Physics Lab. Would an increase in funding help accelerate progress toward game-changing clean-energy breakthroughs?

Answer. DOE believes that the funding levels proposed for the Princeton Plasma Physics Laboratory are appropriate and in balance with other priorities within DOE and throughout the Federal Government.

QUESTIONS SUBMITTED BY SENATOR TOM HARKIN

BIOFUELS

Question. Secretary Chu, as you know, biofuels are a remarkable success. They displace close to 10 percent of our gasoline demand. While we can and should also be promoting other oil displacement alternatives, such as electric vehicles, continued

[5] http://hydrogen.energy.gov/pdfs/10004_fuel_cell_cost.pdf.

[6] http://www1.eere.energy.gov/hydrogenandfuelcells/pdfs/ pathways.pdf.

expansion of biofuels seems to be the best option we have for displacing another 10 percent of our gasoline demand. The Congress recognized that in passing the renewable fuel standard (RFS) in the 2007 Energy bill.

Biofuels also face a major marketplace problem. Most biofuel usage today is in the form of E10, a 10 percent blend of ethanol with gasoline. As we continue to expand the contribution from biofuels, we need to remember that a large share of that will continue to be in the form of ethanol. Thus, we need to be able to use higher ethanol blends. We need filling stations that offer higher blends, and we need vehicles that can use those higher blends.

What is the Department of Energy (DOE) doing to promote the availability and use of higher blends of ethanol, beyond E10 and E15? What more could the Department do, and what support from the Congress would be most useful to that end?

Answer. In addition to sponsoring the E15 and E20 test program, DOE's Office of Energy Efficiency and Renewable Energy (EERE) supports several activities to promote higher ethanol blend usage. Specifically, the Energy Policy Act of 1992 requires that Federal, State, and utility fleets acquire alternative fuel vehicles (AFV) annually at determined percentages. These vehicles largely include flex-fuel vehicles that are capable of operating on E85 fuel. EERE's Vehicle Technologies Program (VTP) and Federal Energy Management program manage and monitor AFV acquisitions and alternative fuel usage in those fleets. Additionally, VTP and the Biomass Program are sponsoring fuel dispensing research with Original Equipment Manufacturers and Underwriter's Laboratory to develop and list E15 dispenser retrofit kits that can be installed in retail stations throughout the country. Through the State Energy program and the Energy Efficiency and Conservation Block Grant program, EERE has encouraged recipients to use money for installing renewable energy infrastructure. Last, DOE is actively working with Federal agencies to install alternative fuel pumps at fueling stations, in accordance with Energy Independence and Security Act of 2007 requirements. DOE also supports ongoing research to ensure that fuel dispensed by blender pumps meets American Society for Testing and Materials (ASTM) specifications.

Question. One program that could help expand markets for higher ethanol blends is the Clean Cities program. How much funding in the Clean Cities program will be devoted to expanding markets for E85 and other higher blends in fiscal year 2012, and what will that accomplish?

Answer. The Department agrees that the Clean Cities initiative is an excellent way to expand alternative fuel markets. The President's fiscal year 2012 budget request for Vehicle Technologies Deployment includes $29 million for Clean Cities activities to facilitate the deployment of renewable and alternative fuels and advanced technologies, as well as the infrastructure to support their widespread use. Clean Cities funds would support competitively awarded vehicle infrastructure deployment projects, including E85 and other renewable biofuel vehicle projects; the funding opportunity would require a minimum 50 percent cost share. Clean Cities funds also would be used to provide technical assistance, tools, and consumer information related to renewable and alternative fuels and advanced technologies that reduce petroleum consumption. Examples include safety information related to renewable fuels for permitting officials and first responders, GPS data and mapping tools for locating renewable fuel stations (the current public database includes more than 3,000 sites for E85 and B20 biodiesel), and the Federal Fuel Economy Guide and FuelEconomy.gov, which include vehicle information on E85 flex-fuel vehicles available in the United States.

Question. When we met with your Deputy Secretary Dan Poneman and with EPA Administrator Lisa Jackson last August, we learned that DOE was testing E20 in a fleet of autos in parallel with your testing of E15. What are the results of those tests, please? Would those tests support authorizing use of E20 in all vehicles of model year 2001 and newer?

Answer. DOE is in the process of testing the final four vehicle models on E20 fuel. The test results are expected to be ready by December 2011. As you know the E15 testing was completed in December 2010 and the waiver request was ruled upon by EPA in January 2011 largely based on DOE data. The EPA determination allows up to E15 blends to be used in all model year 2001 and newer vehicles. Any decision to allow E20 use for the same model year vehicles would have to be determined by EPA. DOE will continue to share the data with EPA as it becomes available.

Question. We share a belief in the importance of accelerating the development and commercialization of advanced biofuels, and I am pleased that you are proposing to conduct a reverse auction for advanced biofuels in fiscal year 2012. I believe conducting an earlier reverse auction, in this fiscal year 2011, would be a good way to get some experience with this process for both DOE and the industry.

Will you conduct an initial reverse auction for advanced biofuels in fiscal year 2011? Please tell me when the fiscal year 2012 auction will take place.

Answer. The Department had originally planned to conduct an initial reverse auction in fiscal year 2011; however, because many of the companies planning to build biorefineries to produce cellulosic biofuels have been delayed due to economic conditions, it was decided to postpone the proposed auction until fiscal year 2012. It was felt that a larger auction would validate the concept and result in a more meaningful effect on the marketplace. The timing of the fiscal year 2012 auction will depend on several factors including industry conditions and the budget process.

HYDROGEN AND FUEL CELLS

Question. Secretary Chu, in the early 1990s, I was one of the first in the Congress to call for research and development (R&D) of hydrogen and fuel cell technologies in the DOE's energy programs. I was pleased when these technologies were given legitimate program status in the DOE's energy R&D portfolio along with reasonable funding within that portfolio. I'm told that this program has been quite successful in meeting its goals and milestones. However, your budget proposal for fiscal year 2012 proposes a very significant cut to this program area.

Why are you proposing to cut the hydrogen and fuel cells program budget by 41 percent in fiscal year 2012 in the context of a proposal for an overall budget increase of 46 percent across all of the EERE programs?

Answer. The Department of Energy's (DOE) strategy is to sustain a balanced R&D portfolio, with an emphasis on nearer-term priorities, such as batteries, advanced vehicle technologies, and technologies for renewable power and energy efficiency. Fuel cell electric vehicles (FCEVs) are still part of the portfolio of options under development. In fact, DOE's increased funding for battery R&D will also be beneficial for FCEVs which rely on batteries in addition to fuel cells.

The Department will continue its critical efforts in hydrogen and fuel cell R&D, which have already reduced the cost of fuel cells by more than 30 percent since 2008 and 80 percent since 2002.[7] In fact, DOE's hydrogen and fuel cell program has been extremely successful, resulting in approximately 200 patents, 30 products being put on the market, and industry currently pursuing development of more than 50 emerging technologies.[8] The fiscal year 2012 budget sustains DOE's core R&D efforts which will continue to advance the technologies and improve the likelihood of a successful rollout by automobile manufacturers in the coming years.

DISTRIBUTED WIND

Question. Secretary Chu, we're all aware of the benefits of large-scale wind projects in the United States, and I'm especially proud of the leadership role Iowa is playing in windpower manufacturing and power generation. However, there also is great potential for smaller-scale "distributed wind" projects. In fact, smaller wind turbine systems can often result in outsized benefits to rural communities, farmers, ranchers and other citizens. Small wind systems also offer a domestic manufacturing development opportunity given that 95 percent of the small wind systems installed in the United States in 2009 were manufactured domestically. Moreover, much of that manufacturing activity is occurring in economically challenged rural areas.

In fiscal year 2010, DOE spent approximately $80 million on research, development, and demonstration (RD&D) for wind energy, but only about 2 percent of that total, about $1.6 million was for small- and medium-sized wind.

Given the significant contributions that distributed wind can make to our rural economy and our clean-energy future, do you think that the Department ought to place more emphasis on this important renewable energy technology?

Answer. In fiscal year 2010, roughly $5.9 million, approximately 7.4 percent, of the total DOE budget for wind energy RD&D went to distributed wind energy technology, including small (greater than 1 kilowatt and less than or equal to 100 kilowatts) and midsize (greater than 100 kilowatts and less than or equal to 1 megawatt) technologies. While distributed wind technology remains a part of the portfolio, the Department has recently increased its emphasis on less mature offshore wind technologies, as indicated by the President's fiscal year 2012 budget request. DOE nevertheless plans to continue to support activities related to product testing, standards development, and the establishment of an accredited third-party certification body for small wind turbine technology. The Department also plans to fund

[7] http://hydrogen.energy.gov/pdfs/10004__fuel __cell__cost.pdf.
[8] http://www1.eere.energy.gov/hydrogenandfuelcells/pdfs/ pathways.pdf.

the remaining $3.2 million of a $5.1 million funding opportunity to support midsize turbine prototype development by the close of fiscal year 2011.

The Department plans to consider research and development efforts that build on this funding opportunity to ensure that a range of domestically manufactured midsize turbines is commercially available. Other planned future program activities include risk mitigation through demonstration projects, testing, and standards development to support the development of the midsize turbine technology. The Department also plans research and development on high-throughput manufacturing techniques for wind technologies in order to remain cost-competitive in the export market while supporting domestic jobs.

Question. Will you agree to take a close look at DOE's wind power program very soon and take steps to increase DOE's focus and support for distributed wind power?

Answer. The DOE Wind and Water Power program is supporting the development of a distributed wind industry roadmap to be completed in 2012. This roadmap will be a reference document to help the wind industry prioritize strategic activities required to overcome barriers hindering widespread development and deployment of distributed wind technology. Currently, the program supports activities related to product testing, standards development, and the establishment of an accredited third-party certification body for small wind turbine technology. The program also plans to fund the remaining $3.2 million of a $5.1 million funding opportunity to support midsize turbine prototype development by the close of fiscal year 2011.

The Department plans to consider research and development efforts that build on this funding opportunity to ensure that a range of domestically manufactured midsize turbines is commercially available. Other planned future program activities include risk mitigation through demonstration projects, testing, and standards development to support the development of the midsize turbine technology. The Department also plans R&D on high-throughput manufacturing techniques for wind technologies in order to remain cost-competitive in the export market while supporting domestic jobs.

QUESTIONS SUBMITTED BY SENATOR JON TESTER

FUEL CELLS

Question. Fuel cells are manufactured in America from American raw materials, and produce clean energy that uses American resources efficiently. Montana is home to the only platinum mine in the country, which provides the catalysts for stationary and vehicle fuel cells. Montana also has the largest recoverable coal reserves in the United States and though fuel cells are viable now, they also offer a potential future for coal, as they are the most efficient way to use any fuel, including fossil fuels. I feel very good about the progress fuel cell manufacturers have made and will continue to make in reducing the amount of platinum used in these catalysts, to bend down the cost curve.

The industry believes that the best way to continue those reductions is through commercialization, but that your fuel cell and hydrogen budget misplaces priorities with an over-emphasis on research and development R&D, while eliminating commercialization support for solid oxide fuel cells and fuel cell forklifts, just as they are beginning to achieve market success. Is the industry wrong?

Answer. The Department's strategy is to sustain a balanced (R&D) portfolio, with an emphasis on nearer-term priorities, such as batteries, advanced vehicle technologies, and technologies for renewable power and energy efficiency. Fuel cell electric vehicles (FCEVs) are still part of the portfolio of options under development. In fact, DOE's increased funding for battery R&D will also be beneficial for FCEVs which rely on batteries in addition to fuel cells.

The Department will continue its critical efforts in hydrogen and fuel cell R&D, which have already reduced the cost of fuel cells by more than 30 percent since 2008 and 80 percent since 2002.[9] In fact, the Department of Energy's (DOE) hydrogen and fuel cell program has been extremely successful, resulting in approximately 200 patents, 30 products being put on the market, and industry currently pursuing development of more than 50 emerging technologies.[10] The fiscal year 2012 budget sustains DOE's core R&D efforts which will continue to advance the technologies

[9] http://hydrogen.energy.gov/pdfs/10004__fuel __cell__cost.pdf.
[10] http://www1.eere.energy.gov/hydrogenandfuelcells/ pdfs/pathways.pdf.

and improve the likelihood of a successful rollout by automobile manufacturers in the coming years.

Question. Both fuel cell and hydrogen researchers and the industry believe that if your fiscal year 2012 budget is enacted, its structure and dollar amount will cause the United States to lose its competitive edge in fuel cells for stationary power and transportation applications. Is the industry wrong? If not, are you comfortable losing this industry to Germany, Japan, South Korea, China, and South Africa?

Answer. To the contrary, the Department's basic R&D work is absolutely essential to ensuring American automakers have the best technology available to be competitive in the global marketplace.

DISTRIBUTED WIND

Question. Secretary Chu, while we're all aware of the myriad benefits of large, industrial-scale wind projects in the United States, there is great potential for smaller-scale "distributed wind" projects as well. In Montana, we have second-best wind potential in the United States. In fact, smaller wind turbines or projects can often result in outsized benefits to rural communities, farmers, ranchers and other citizens. And buy-in for smaller wind translates into social acceptance of larger-scale projects.

It can also help to reinvigorate our Nation's manufacturing base given that 95 percent of the small wind systems installed in the United States in 2009 was manufactured domestically and much of that manufacturing activity occurred in economically challenged rural areas.

In fiscal year 2010, DOE spent approximately $80 million on research, development and demonstration (RD&D) for wind energy, but only about 2 percent of that total, about $1.6 million was for small- and medium-sized wind. By contrast, your agency spent roughly $250 million on solar RD&D in that same time period.

Given the significant contributions that distributed wind can make to our rural economy and our clean-energy future; do you think that the Department ought to place more emphasis on this important renewable energy technology?

Answer. In fiscal year 2010, roughly $5.9 million, approximately 7.4 percent, of the total DOE budget for wind energy RD&D went to distributed wind energy technology, including small (greater than 1 kilowatt and less than or equal to 100 kilowatts) and midsize (greater than 100 kilowatts and less than or equal to 1 megawatt) technologies. While distributed wind technology remains a priority for DOE, the Department has recently increased its emphasis on less mature offshore wind technologies, as indicated by the President's fiscal year 2012 budget request. DOE nevertheless plans to continue to support activities related to product testing, standards development, and the establishment of an accredited third-party certification body for small wind turbine technology. The Department also plans to award the remaining $3.2 million of a $5.1 million funding opportunity to support midsize turbine prototype development by the close of fiscal year 2011.

The Department plans to consider research and development efforts that build on this funding opportunity to ensure that a range of domestically manufactured midsize turbines is commercially available. Other planned future program activities include risk mitigation through demonstration projects, testing, and standards development to support the development of the midsize turbine technology. The Department also plans research and development on high-throughput manufacturing techniques for distributed wind technologies in order to remain cost-competitive in the export market while supporting domestic jobs.

Question. Will you agree to take a close look at DOE's wind power program very soon and assess steps to increase focus and support for distributed wind power?

Answer. The DOE Wind and Water Power program is supporting the development of a distributed wind industry roadmap to be completed in 2012. This roadmap will be a reference document to help the wind industry prioritize strategic activities required to overcome barriers hindering widespread development and deployment of distributed wind technology. Currently, the program supports activities related to product testing, standards development, and the establishment of an accredited third-party certification body for small wind turbine technology. The program also plans to fund the remaining $3.2 million of a $5.1 million funding opportunity to support midsize turbine prototype development by the close of fiscal year 2011.

WESTERN AREA POWER ADMINISTRATION TRANSMISSION

Question. As you know, in February 2009 (in the American Recovery and Reinvestment Act [ARRA]), the Congress provided Western Area Power Administration (WAPA) with ample and broad borrowing authority to plan, finance, build, study, and operate new and upgraded electric power transmission lines that deliver or fa-

cilitate the delivery of power generated by new renewable energy resources. Last year in this same hearing, we discussed how little of that $3.25 billion in borrowing authority had been exercised. Unfortunately, nothing has changed and still less than 5 percent of that money is obligated.

The legislation is pretty clear. The Administrator of WAPA is supposed to use that borrowing authority to go forth and build. That's not completely autonomous authority, but the Congress intended WAPA to be fairly independent when using it. WAPA can't run a program like the Congress intended if they have to renegotiate each deal with each level of DOE then Office of Management and Budget (OMB). The developers will lose interest and quit. That's just a recipe for inaction laid on top of all the other permitting challenges for new transmission and renewable energy projects.

Mr. Secretary, what's going on? Could you describe the review and approval process for this borrowing authority and who is the transmission expert in charge at the Department for guiding this important program?

Answer. When a project proposal is presented to WAPA, WAPA reviews the proposal and works with the project developer to address any deficiencies. Once this is complete, WAPA begins an analysis of the project, including an in-depth review by subject matter experts and independent examiners such as Deloitte Corporate Finance, LLC. The proposal is evaluated against the criteria specified for the Transmission Infrastructure Program (TIP) in a Federal Register notice published on May 14, 2009. Specific terms and conditions may have to be negotiated with the project developer in order to ensure there is reasonable expectation the Treasury borrowing will be repaid.

When WAPA is satisfied the project has merit and is appropriate for borrowing authority funding, WAPA presents the project to the DOE and the Office of Management and Budget for their approval.

In June, 2011, Secretary Chu appointed Lauren Azar as the Secretary's Senior Policy Advisor for Transmission. Ms. Azar is an expert on electric power transmission, and played a critical role in the Department's review and approval of TIP projects since her arrival.

Question. Could you, Director Lew and Secretary Geithner lay down some simple guidance for WAPA that will let them get to work?

Answer. Yes. In April 2009, WAPA signed a Memorandum of Understanding (MOU) with the Treasury Department that established the terms and conditions for loans made by the U.S. Treasury to WAPA pursuant to borrowing authority provided WAPA in ARRA (Public Law 111–5). This MOU has been reviewed and revised periodically, and the arrangement is working well.

Question. Could you tell us, for the record, how many miles of new transmission lines have been built thus far under WAPA TIP)?

Answer. To date, to WAPA's TIP has funded the construction of 33 miles of new transmission line. This construction is for the Montana-Alberta Tie Ltd. Transmission Project.

Question. How many miles for Bonneville Power Administration (BPA)? And, what has BPA done with the increase in their already massive borrowing authority provided by ARRA?

Answer. BPA finances its operations with a business-type budget and on the basis of self-financing authority. Authority to borrow from the U.S. Treasury is available to BPA on a permanent, indefinite basis. The amount of Treasury borrowing outstanding at any time cannot exceed $7.7 billion and must be repaid at interest rates comparable to borrowings at open market rates for similar issues. BPA's Treasury borrowing authority is used to finance projects that sustain and enhance the Federal Columbia River Power System, including transmission, hydropower modernization, fish and wildlife mitigation, and conservation. Transmission investments and enhancement use the greatest amount of U.S. Treasury borrowing.

BPA's transmission system now includes more than 15,000 circuit miles of line and 263 substations. The capital financing required to sustain this system and meet new demands is significant. Before receiving the additional $3.25 billion of borrowing authority as part of ARRA, BPA estimated it would reach its Treasury borrowing authority limit between 2013 and 2016. The new increment of borrowing authority gave BPA the certainty of sufficient access to capital to proceed with new-start projects and ensured that existing capital projects could proceed as planned. With this financing certainty, BPA commenced construction work on two major network reinforcement projects and another two are in planning and environmental review stages. If all four lines are constructed, these lines will add more than 220 miles of lines to the Northwest transmission grid, improve reliability, and allow BPA to provide transmission service to about 5,853 megawatts of requests for BPA transmission; including 4,891 megawatts of additional wind integration and green

energy. BPA has completed construction on a total of 75 transmission towers and 58 miles of transmission on the McNary-John Day line, the first project that was ready to begin at the time the ARRA was enacted.

Additional upgrades, additions and replacements also have modernized the transmission grid assets, more than 50 percent of which were built prior to 1960.

In addition to investments in the TIP system, BPA's Treasury borrowing authority is used for investments in hydro modernization, fish and wildlife, and energy efficiency. For example, with the additional access to capital, BPA was able to fund a major rehabilitation of the Grand Coulee Third Powerhouse that will improve hydro efficiency and is critical to the Federal Columbia River Power System (FCRPS) for power production, water management, system stability, and ancillary services to the main transmission grid. Because of increased access to capital, BPA is investing $203 million through 2017 in upgrades and replacements at Federal dams. Also, the additional borrowing authority has enabled BPA to fund three major fish hatchery projects and will help BPA meet its portion of the aggressive targets for energy efficiency in the Northwest Power Planning and Conservation Council's Sixth Power Plan. Conservation is the region's resource of choice for meeting load growth for the next 5 years and beyond.

While BPA's total borrowing authority, including the new increment, is one single funding authority, as of this time, BPA has identified up to $2 billion in major capital projects attributed to ARRA through 2017. Of this total, $583 million has been expended to date. The capital projects attributed to ARRA include several of the transmission, hydropower modernization, fish and wildlife mitigation, and conservation projects mentioned earlier.

The additional $3.25 billion in borrowing authority has been instrumental in providing BPA with assurance that it can proceed with essential investment in the region's aging infrastructure and meet the increasing demands of its entire capital program. Without available borrowing authority, BPA would have to defer or reduce valuable capital work needed to keep the FCRPS delivering the clean, renewable electricity that is the backbone of the region's economy. Even with the ARRA providing a sizable increase in BPA's authority to borrow from the Treasury, the agency will continue to face capital funding challenges as the pace of capital spending increases to meet the infrastructure and energy efficiency needs of the region. BPA continues to seek opportunities for alternative funding sources with third parties.

COORDINATION OF POWER MARKETING ADMINISTRATIONS AND THE DEPARTMENT OF ENERGY POLICY

Question. The Power Marketing Administrations and Tennessee Valley Authority are all somewhat different animals, due to their enabling legislation. But, presumably, they and their Senate-confirmed board members are all working together with you and the administration to further the goals of the President—energy efficiency, renewable and clean energy, a more reliable and smarter grid and so on. How does all that work, because it's not obvious from out here that it's all hanging together with any specific goals in mind?

Specifically you released a proposal to promote development of Pump Storage Hydro, while at the same time one of the Power Marketing Administrations was turning away companies interested in working with the Agency to develop permitted projects in their service territory.

Where does it all get knitted together at the Department?

Answer. DOE briefed Senator Tester's staff on this issue.

Question. Do the heads of the PMAs meet regularly with you and your team?

Answer. DOE briefed Senator Tester's staff on this issue.

RURAL IMPLEMENTATION

Question. While DOE is certainly the premier Federal agency dealing with research, development, and demonstration for energy, many other agencies—the Department of Agriculture (USDA), the Department of Defense, the Environmental Protection Agency (EPA) and the Department of the Interior—also have authority and resources to support Energy development. Along those lines you've teamed up with USDA to work on the development of biofuels. That is a good first step.

But how are you coordinating with these agencies to expand information about your solicitations, projects and commercialization opportunities, especially in rural America where they develop and harness this energy? How about with development of distributed technologies? Are you willing to commit to working with your sister agencies to identify opportunities to expand opportunities for distributed wind and other technologies?

Answer. The Department is committed to regularly engaging with other agencies about program activities in order to maximize coordination and prevent interagency overlaps. For example, regarding biomass-related activities, DOE regularly coordinates through the Biomass Research and Development Board,[11] which is an interagency collaborative composed of senior decisionmakers from Federal agencies and the White House—including DOE and USDA (cochairs); the Departments of the Interior, Transportation, and Defense, EPA; the National Science Foundation; and the White House Office of Science and Technology Policy. The Board is charged with maximizing the benefits of Federal programs and bringing coherence to Federal strategic planning in biomass research and development, including minimizing unnecessary duplication of activities. Several other interagency formal and informal collaborations function to leverage existing expertise across agencies with similar missions and goals, such as Memoranda of Understanding (MOU), regular working group meetings, joint solicitations, and other mechanisms. Examples of MOUs signed over the last 2 years include one on hydrogen with the Army Corps of Engineers and the Interior Department, one on off-shore wind, marine and hydrokinetic devices with the Interior Department, and an updated MOU with EPA on ENERGY STAR.

MECHANICAL INSULATION PROGRAM

Question. Mr. Secretary, Montana was part of a very successful pilot program, the Mechanical Insulation Education and Awareness Campaign, which initially received $500,000 in fiscal year 2010 through the DOE's Industrial Technologies Program (ITP).

Montana performed an energy assessment in partnership with DOE and the mechanical insulation industry. The program looked at 25 buildings in the capitol complex and found that installing or replacing mechanical insulation in those buildings would save 6 billion Btus per year, representing roughly 8 percent of the total natural gas consumption of the facilities analyzed, with an overall payback period of 4.1 years.

This is such low-hanging fruit to replace damaged mechanical insulation puts people to work immediately and cuts our energy consumption.

How to plan to expand and invest in this successful program, promoting it to other States and locations?

Answer. Through the activities conducted under the Mechanical Insulation program, ITP has developed five calculation tools that allow users to find cost-effective insulation opportunities such as those identified in Montana and to calculate ROI and paybacks. These tools, once broadly distributed the summer of 2011, will carry forward the results of the Montana pilot program and encourage similar assessments in all States across the United States. In addition, the Campaign has developed seven online training modules that will be completed by September 2011 that educate industrial facilities, building owners, property managers, and the construction industry on how to find and implement energy efficiency opportunities through greater and more effective use of mechanical insulation. Because of these self-paced tools and training modules, ITP believes that thousands of users can be educated on the benefits of mechanical insulation at little additional cost to DOE and the taxpayer. Success stories will be developed on Mechanical Insulation and promoted on the ITP Web site and disseminated through organizations such as equipment suppliers, the National Association of State Energy Officials and the National Insulation Association.

Question. How does your budget efficiently invest in more energy efficiency programs we can implement today?

Answer. ITP is collaborating with approximately 100 companies, helping them measure and manage their energy usage so as to demonstrate that significant energy savings are possible. For example, after receiving three energy savings audits from ITP, an automotive manufacturer reduced its energy intensity 29 percent in 1 year at a U.S.-based facility.

Now that ITP has demonstrated that significant energy intensity reductions are possible, the program is developing a set of standard tools and protocols to increase its leverage and reach. By investing in these standard tools and protocols that help private sector companies measure and manage their energy usage, ITP is fostering the energy management industry. ITP is also developing Professional Certification programs for energy management professionals and auditors who will be employed

[11] The Board, as well as the Technical Advisory Committee and the annual solicitation, were established by the Biomass Research and Development Act of 2000, and later amended by section 9001 of the Food Conservation and Energy Act of 2008.

in the emerging energy management industry, as part of its development of a broader industrial energy efficiency certification program.

ITP is also investing in the training of next-generation energy management engineers. Since 2002, 650 graduate and undergraduate students have been successfully trained in energy management through university-based Industrial Assessment Centers (IACs). ITP plans to continue to train additional students through these IACs over the coming years.

All of these activities are being implemented in the near term, will result in energy efficiency gains, and will help create jobs and improve the competitiveness of U.S. companies.

QUESTIONS SUBMITTED BY SENATOR LAMAR ALEXANDER

OAK RIDGE CLEANUP

Question. Department of Energy (DOE) is requesting about $400 million in fiscal year 2012 for clean-up activities at the Oak Ridge Reservation (ORR). Can you assure me the highest-risk safety concerns are being addressed at Oak Ridge Reservation? DOE is bartering its uranium inventory to help pay for costs of cleanup at the Portsmouth gaseous diffusion plant. Oak Ridge (East Tennessee Technology Park) is home to 1 of the 3 original uranium gaseous diffusion plants. Why shouldn't this facility (K–25) be cleaned up with funds gained in barter of uranium?

Answer. The highest-risk safety concerns are being addressed at the ORR. The K–25 Building at the East Tennessee Technology Park (ETTP) is the highest-risk safety concern on the Reservation due to its age and deterioration, as well as the presence of special nuclear material and radiological and hazardous contaminants. The $400 million in fiscal year 2012 addresses this highest risk. For some of the other high risks on the ORR, such as mercury at Y–12 and nuclear materials in the Central Campus at the Oak Ridge National Laboratory (ORNL) (specifically, legacy materials at two of the former isotope production facilities, Buildings 3026 and 3038; and those found in the Tank W–1A area soils, the most significant source of groundwater contamination in that area), funds from the American Recovery and Reinvestment Act (ARRA) are being used to address these risks. As for the use of bartering of the uranium inventory to provide additional funding, DOE has established priorities for the transfer of uranium through 2013. The total proposed Department transfers through calendar 2013, including scheduled transfers by National Nuclear Security Administration (NNSA), are approximately 2,000 metric tons of uranium per year, or about 10 percent of U.S. reactor demand, which is a level consistent with the principles and policies set forth in the Department's Excess Uranium Inventory Management Plan.

BLUE RIBBON COMMISSION ON NUCLEAR WASTE

Question. Among the draft recommendations of the Blue Ribbon Commission is increased Federal investment to reduce nuclear waste with advanced materials. Please describe how your budget for nuclear energy would fund research in this area.

Answer. The Reactor and Fuel Cycle Technology Subcommittee of the Blue Ribbon Commission on America's Nuclear Future (Commission) presented draft recommendations to the full Commission. These recommendations of the subcommittee are draft, and subject to further consideration by the full Commission. The Department will carefully consider the Commission's recommendations and advice contained in their final report—due in January 2012—and determine a path forward at that time.

AMERICAN RECOVERY AND REINVESTMENT ACT

Question. DOE has roughly $2 billion in unspent American Recovery and Reinvestment Act (ARRA) funds for weatherization grants, and another $2 billion from the State Energy Grant program. Why do these balances exist, and why are additional funds being requested for fiscal year 2012 given the unspent balances?

Answer. DOE set an aggressive 3-year performance period in the original grant contracts to maximize the timely job creation potential of the funds delivered to State and local communities under ARRA. This timeline has supported thousands of jobs, delivered energy-saving technologies that will save money for families, businesses, and State and local governments across the Nation for many years, and spurred American competitiveness in the global market for energy efficiency and renewable energy.

As of December 19, 2011, grantees of the Weatherization Assistance Program (WAP) have spent $4 billion of their total $4.8 billion ARRA allocation. This leaves less than $850 million remaining to be spent in the final 4 months of the original grant period. It is anticipated that some grantees will have balances remaining on March 31, 2012 and will request performance period modifications so funds can continue to be used for their original purpose of weatherizing the homes of low-income families. WAP has already exceeded its original ARRA production goal of 593,000 homes weatherized with 4 months remaining and could eclipse 700,000 homes using the balances on existing grants.

Grantees of the State Energy Program (SEP) have spent $2.1 billion, or more than two-thirds of their $3.1 billion ARRA allocation. DOE is working with each grantee to assess opportunities to responsibly deploy additional ARRA funds to fully use each grant and create jobs in their State and local communities. The vast majority—about 90 percent—of ARRA grant funds by DOE's SEP will be spent within the current performance period on projects that have supported thousands of jobs, saved energy, deployed clean-energy solutions, and strengthened the economic foundation of communities across the country. It is anticipated that some grantees will have relatively small balances remaining on April 30, 2012, and will request performance period modifications that will be considered on a case-by-case basis. SEP ARRA investments have supported energy-efficiency upgrades of more than 60,000 buildings and building roofs, totaling approximately 361,000,000 square feet, upgraded and repurposed more than 625,000 square feet of manufacturing space to produce clean-energy products, and contributed to the installation of 350,000 kW of renewable energy systems. These projects have supported high-paying jobs in the fields of construction and design/engineering, manufacturing and transportation while saving energy and money over the long term.

Additional funds are included in the fiscal year 2012 budget request to support the efforts of WAP and SEP in their proven ability to drive economic development and job creation and to leverage Federal dollars using the lessons learned under ARRA. The majority of the Weatherization and Intergovernmental Programs (WIP) ARRA grants have a performance period ending in early 2012. Even with the performance-period modifications, the majority of ARRA funds will be expended by then or shortly thereafter. The need for 2012 funding is vital to cushion the ramp down of production and employment in the weatherization network and to provide State and local governments with support in the continued administration of more than $530 million in revolving loan funds initiated in 35 States and 100 communities with ARRA funds. ARRA funding for WAP helped fund as high as 15,600 full-time positions in the network and still is listed as seventh in the ARRA portfolio with 14,200 jobs supported last quarter. In addition, WAP has leveraged more than $800 million each year of ARRA in Federal and non-Federal funding to support the weatherization work at the local level. This leveraging has contributed significantly to the number of homes weatherized and jobs supported, and has assisted in expanding the array of services provided in each home. SEP will also continue to expand and replicate the many best practices developed with ARRA grant funds throughout the country, leveraged by the innovative financing programs they have started. These types of activities continue with any annual appropriations provided by the Congress.

CONTRACTS MANAGEMENT

Question. DOE has been on Government Accountability Office's (GAO) high-risk list for potential fraud, waste, and abuse for contractor oversight since 1990. According to GAO, "GAO designated DOE's contract management as a high-risk area in 1990 because of DOE's record of inadequate management and oversight of its contractors." While the Office of Science (SC) was removed from the "high risk" status, Environmental Management and NNSA remain. What steps is DOE taking to improve contracts management within the Office of Environmental Management (EM)?

Answer. Over the last 2 years, EM has continued to implement corrective actions and been recognized by GAO as having met 3 of the 5 criteria for removal from the high-risk list. EM leadership remains fully committed to continuing this improvement journey. GAO also acknowledged positive actions for the two criteria not yet achieved. These actions include the establishment of clear project and contract management policies and guidance, use of a certified earned value management system by our contractors as well as ensuring our Federal oversight staff was certified at the appropriate level. GAO has noted "the steps illustrate DOE's commitment to improving its contract and project management, but the results of these efforts must ultimately be demonstrated through improved project performance." Toward that end, the current project performance data show that EM will meet or exceed the

success criteria of completing 90 percent of capital asset projects within 10 percent of original cost and schedule baselines.

The two remaining criteria which GAO has judged EM as having not achieved are providing the capacity, both people and resources, to address problems, and independent validation that corrective measures are effective and sustainable.

EM has taken the following actions to address capacity:

—EM has assigned senior, experienced project managers as Headquarters Project Sponsors for three large capital projects, Sodium Bearing Waste Project in Idaho, Salt Waste Processing Facility at Savannah River, and U–233 Facility at Oak Ridge.

—EM has hired a Chief Scientist to serve as a direct advisor to the Assistant Secretary of EM for complex technical and design issues.

—EM has arranged for high-caliber technical expertise through use of a Technical Expert Group which has access to multiple DOE national laboratories.

—EM has continued review of project staffing adequacy during recurring independent project reviews.

EM has taken the following actions to address validation:

—Conducting monthly project reviews incorporating lessons learned from transparent reporting on ARRA projects.

—Completing Independent Project Reviews, modeled after the SC approach, on a semi-annual schedule for the larger capital projects.

—Actively participating in recent Department-wide initiatives for improvement in contract and project management.

EM is committed to continuous improvement in its performance of its mission and in the achievement of all the GAO criteria.

SCIENCE LABS

Question. SC is currently operating 10 DOE labs across the country. Can we afford to continue to operate all of these facilities? Should we start looking at reducing the number of national labs?

Answer. We believe that continued operation of DOE's national laboratories, at the levels proposed in the fiscal year 2012 President's budget, is a national priority. The 10 Office of Science laboratories play a critical role in the Nation's research and development (R&D) enterprise. The Department's national laboratories are home to the world's largest collection of scientific user facilities, supporting more than 26,000 unique users from universities, national labs, other Federal agencies and businesses large and small each year. Functioning as an interdependent system with an exceptional set of world-leading facilities and distinctive capabilities, they deliver clear benefits to the Nation's research community and help solve problems of national importance. They work in partnership with universities and industry, transfer the results of their R&D to the marketplace, and support the training of the future science and engineering workforce.

It is increasingly clear that transformational science and breakthrough technologies will be needed to overcome the complex challenges that we face as a Nation in the 21st century:

—increasing the availability of clean, reliable, and affordable energy;

—ensuring our national security in a changing world; and

—enhancing U.S. competitiveness by encouraging innovation.

DOE national laboratories are uniquely equipped and positioned to make substantial contributions to the U.S. research enterprise.

More than 80 Nobel prizes have resulted from research affiliated with DOE, much of which was made possible by the unique instrumentation and equipment available to the scientific community through the national laboratories.

Some recent results of research conducted by the laboratories operated by the SC include:

—development of the world's smallest battery;

—development of software that searches databases 10 to 100 times faster than large commercial database software;

—development of a technology to use complementary strands of synthetic DNA to build functional materials from the smallest building blocks—future applications include biosensors, optical nano-devices, and new kinds of solar cells;

—development of the first microbe that can produce an advanced biofuel (an alternative to petroleum) directly from fatty acids in biomass;

—development of nanoscale catalysts and multifunctional membranes that may greatly enhance the practicality of fuel-cell powered vehicles; and

—development of a technique to create thin diamond films that are helping industry create energy-saving, ultra-low friction and wear coatings for mechanical pump seals and tools.

Each of these accomplishments was made possible by a consistent and sustained investment in DOE's national laboratories, which provide unique capabilities for maintaining U.S. leadership in science and technology. These national laboratories also contain the world's largest suite of synchrotron radiation light source facilities, neutron scattering facilities, electron-beam microcharacterization centers, and nanoscale science research centers, which provide open access to specialized instrumentation and expertise that enable scientific users from universities, national laboratories, and industry to carry out experiments and develop theories that could not be done at their home institutions.

During these tough economic times, DOE recognizes the need to identify savings throughout its budget. In the fiscal year 2012 budget request to the Congress, SC funded its national laboratories at a level consistent with the needs of the Department and the scientific community. Savings will be realized in fiscal year 2012 with the termination of operations at the Holifield Radioactive Ion Beam Facility national user facility at ORNL. In addition, by the end of fiscal year 2011, we are completing operation of the world's largest proton-antiproton collider, the Tevatron, at the Fermi National Accelerator Laboratory. The planned closure of the Tevatron coincides with the full start of operations of the Large Hadron Collider in Europe.

Question. Should we start looking at reducing the number of national labs?

Answer. SC regularly reviews the status of the projects and programs underway at the laboratories to ensure that they are focused, unique, and producing the significant scientific results required and expected from the investment of taxpayer dollars. Science's laboratories are not static. SC actively engages its labs to assure continued relevance and renewed infrastructure. No lab demonstrates that better than SLAC National Accelerator Laboratory. A few years ago, it was single-purpose particle physics lab. Through prudent investments, such as the Linac Coherent Light Source, SLAC is now a vibrant, multi-program laboratory making significant contributions in photon science, astrophysics, particle physics, and accelerator research. ORNL in your home State has similarly been revitalized and renewed over the past decade. The programs and projects at the national laboratories are designed, executed, and monitored to leverage, not duplicate, the activities conducted by other participants in the global scientific and academic communities. It is critical to our national security, as well as our economic, technical, and scientific standing in the world that these national laboratories continue to foster the future technological innovations and scientific discoveries that will continue to lead the United States on a path of prosperity.

FOSSIL ENERGY

Question. If one of the goals of this administration is to reduce emissions, then why reduce funding for fossil energy? If we want cleaner coal or carbon sequestration, how do you accomplish this without continued investment is fossil fuels research?

Answer. The Fossil Energy (FE) fiscal year 2012 budget request upholds the President's goals to develop America's innovative competitive edge through strategic investments in our Nation's clean-energy research, development, and demonstration (RD&D) activities. FE's budget request takes into consideration the need for budget restraint, which requires making tough choices across all DOE R&D program areas. We are investing in only the key enabling technologies that are on critical paths and that show the highest-potential impacts on achieving the program goals and benefits in the timeframe needed for deployment. In addition, ARRA funding provided substantial investments in carbon capture and storage R&D and demonstrations ($3.4 billion from ARRA funds).

STRATEGIC PETROLEUM RESERVE

Question. DOE proposes to sell some crude oil reserves to generate $500 million in budgetary savings. Please describe in detail the rationale for reducing the inventory? If the proposal is driven based on the need to free up space for inspection and maintenance purposes, why isn't DOE proposing a specific number of barrels, rather than a dollar amount? What type grade do you propose to sell (light, heavy, sweet or sour), and what is the basis for that plan?

Answer. The sale is proposed to provide operational flexibility in managing the reserve. The Strategic Petroleum Reserve seeks to reduce its inventory by 5–6 million barrels in order to alleviate unplanned overcapacity at some SPR caverns. The overfilling occurred due to the relocation of crude oil from Bayou Choctaw Cavern

20 to other caverns and the need to free up cavern space throughout the SPR complex. Spare capacity and operational flexibility is needed for example to perform casing inspections and workovers, to allow on-site oil movements that may be required from time to time, and to comply with a recent Texas Railroad Commission requirement for more stringent inspections. No decisions have been made about what grade of crude oil would be sold.

QUESTIONS SUBMITTED BY SENATOR MITCH MCCONNELL

Question. Does the Department have a timeline for considering an unsolicited proposal on tails re-enrichment or releasing an updated uranium inventory management plan? Given that there are more than 1,200 jobs on the line, is there no sense of urgency at the Department to accelerate the consideration of re-enriching uranium tails?

Answer. Upon receipt of any unsolicited proposal, the Department of Energy (DOE) conducts a review consistent with applicable statutes, regulations, and guidelines. While there is no set period of time for review of an unsolicited proposal, the Department conducts its review as expeditiously as possible. The Department is currently working on updating its Excess Uranium Inventory Management Plan. The Department's 2008 Excess Uranium Inventory Management Plan provided guidelines for the management of the Department's excess uranium inventory and described planned and future projects under consideration, as envisioned in 2008. The Plan was a 10-year estimate of future sales and transfers and it contained the caveat that situations could arise where DOE's actions could change in response to unforeseen developments. Depending on programmatic and policy goals and needs, the Department is evaluating the impacts of changes and decisions made since 2008 and will revise the Plan accordingly.

Any decision by the Department regarding the possible enrichment of its higher assay tails would have to include careful consideration of several factors, among them an appropriate contracting approach, the economic benefits to the taxpayer, and the potential market impacts of processing and selling the higher assay tails. A decision should not be made prior to our full evaluation of all the factors.

Question. A decade's worth of clean-up efforts have been ongoing at the Paducah Gaseous Diffusion Plant (PGDP), which have included the removal of 30,000 tons of scrap metal, stored hazardous waste, contaminated soil, and facilities. DOE annually submits a budget request to continue these clean-up efforts. However, there is the potential for a budget shortfall in the coming years. What is DOE's proposal to ensure that future budgets meet the needs of clean-up work at the PGDP?

Answer. The Department believes meeting its compliance milestones is essential and continues to prioritize actions to stay on course to meet these enforceable agreements. The Department continues to work with its regulators to ensure projects are appropriately sequenced to optimize resources while utilizing a risk-based approach to cleanup.

Question. If the Department does not anticipate issuing a plan, has the Department included funds in its fiscal year 2012 budget to safely and securely idle the plant once it returns to DOE control? How much does DOE estimate it needs to idle the plant each year?

Answer. The timing of the return of the PGDP to DOE is a business decision solely within United States Enrichment Corporation's (USEC) purview. There are provisions of the USEC lease that we would expect USEC to comply with, in the event USEC decides to cease operations at the Paducah plant. USEC has an obligation under the lease to provide DOE with a 2-year notification of USEC's intent to return the PGDP. The 2 years notice was intended to allow DOE to seek congressional appropriations as part of our annual budget process. DOE will develop estimates for decontamination and decommissioning activities after receiving the 2-year notice from USEC.

QUESTIONS SUBMITTED BY SENATOR LINDSEY GRAHAM

H-CANYON

Question. H-Canyon is a remarkable asset that can play a key role in the future of the complex. It has the capability to handle some of the most complicated materials on Earth. It also has the ability to produce fuel for NASA's space missions and could be the place where the breakthroughs are made for the next generation of spent-fuel recycling. However, your budget does not allow for any of these activities. In fact, the Defense Nuclear Safety Board has warned that the canyon could be lost

forever under current Department of Energy (DOE) plans. How do you justify this? How much would it cost to construct a new canyon? How long would that take? What is the future of H-Canyon?

Answer. For approximately the past 3 years, H-Canyon has been operating to complete the blend down of enriched uranium recovered from the processing of surplus unirradiated highly enriched uranium (HEU) materials. The Department intends to complete the current HEU blend down work in 2011. The Department is planning to transition H-Canyon and HB-Line facilities to modified operations in fiscal year 2012. H-Canyon will continue to receive sample returns from the Savannah River National Laboratory and F Area Laboratory and disposition the samples to the liquid waste system. H-Canyon will also remediate large boxes of legacy transuranic waste. The Department will retain critical staff and perform proficiency runs which maintain the operator qualifications and exercise the processing equipment.

Much of the remaining material that could be processed in H-Canyon in the future is used nuclear fuel (UNF). The Secretary of Energy has determined that no processing of aluminum-clad UNF will occur until the recommendations of the President's Blue Ribbon Commission (BRC) on America's Nuclear Future are issued and evaluated by the Department. The proposed operational condition of H-Canyon will allow the flexibility to process aluminum-clad UNF or any other appropriate nuclear materials, in the future, should that decision be made.

Question. The core mission of DOE's Environmental Management program is to reduce the amount of waste currently sitting in our weapons complex. As such, any decision that would result in the stranding of material should run counter to DOE's mission. This is why DOE's decision not to process 14 metric tons of aluminum clad defense spent nuclear fuel through H-Canyon is so problematic. Under DOE's current vision, this fuel has no disposition path. Will you work with me to ensure that this material does not remain in South Carolina if it is not to be processed through the canyon?

Answer. The Department does not intend to indefinitely store used nuclear fuel (UNF) at the Savannah River Site. However, I have determined that no further processing of aluminum-clad UNF will occur until the recommendations of the President's BRC on America's Nuclear Future are issued and evaluated by the Department. This will allow the Department to make sure these recommendations are factored into decisions on how best to process and disposition this material. By retaining critical staff and performing proficiency runs to maintain operator qualifications and exercise processing equipment, the capability to process spent fuel in the future is being preserved. Should a decision be made to not use the H-Canyon to process the spent fuel, I will work with you to determine an alternative that ensure unprocessed UNF does not remain at the Site.

Question. Trimming unnecessary costs is one way to get our overall budget house in order. Spending money to expand L-basin, where the aluminum clad fuel is stored, instead of processing it through the canyon makes little sense to me. Wouldn't it save DOE money over the long term to process the aluminum clad fuel and ultimately close L-basin?

Answer. Per my previous response, no processing of aluminum-clad UNF will occur until the recommendations of the President's BRC on America's Nuclear Future are issued and evaluated by the Department.

HYDROGEN

Question. Just recently 13 of my colleagues sent you a letter about our support for the fuel cell and hydrogen energy technology programs in your portfolio. Do you share our concern that further cuts to these programs would inhibit the long-term diversification of our Nation's energy portfolio and stunt the development of American-engineered and domestically produced energy systems powered by hydrogen and fuel cells?

Answer. The Department's strategy is to sustain a balanced research and development (R&D) portfolio, with an emphasis on nearer-term priorities, such as batteries, advanced vehicle technologies, and technologies for renewable power and energy efficiency. Fuel cell electric vehicles (FCEVs) are still part of the portfolio of options under development. In fact, DOE's increased funding for battery R&D will also be beneficial for FCEVs which rely on batteries in addition to fuel cells.

The Department will continue its critical efforts in hydrogen and fuel cell R&D, which have already reduced the cost of fuel cells by more than 30 percent since 2008 and 80 percent since 2002.[12] In fact, DOE's hydrogen and fuel cell program has been

[12] http://hydrogen.energy.gov/pdfs/10004__fuel __cell__cost.pdf.

extremely successful, resulting in approximately 200 patents, 30 products being put on the market, and industry currently pursuing development of more than 50 emerging technologies.[13] The fiscal year 2012 budget sustains DOE's core R&D efforts which will continue to advance the technologies and improve the likelihood of a successful rollout by automobile manufacturers in the coming years.

Question. I understand there are studies out there, including one done by the Savannah River National Laboratory in SC, that show that battery electric vehicles (BEVs) and plug in hybrid electric vehicles (PHEVs) are not going to be cheaper than FCEVs nor is their needed infrastructure going to be cheaper. Do you agree with this assessment?

Answer. We are not aware of the Savannah River National Laboratory study you reference, so we cannot comment specifically on its assessment. In general, however, it is very difficult to compare vehicle and infrastructure costs across technologies. There are a number of variables affecting infrastructure cost—such as location and site preparation requirements, public accessibility (versus home-access only), production technology (for hydrogen), and size of station/volume of fuel required or type of electric charging. In addition, although R&D is needed to further reduce cost and improve performance of all advanced vehicle technologies, each is in a different stage of development with different early market requirements, cost-reduction targets, and timelines.

A variety of vehicle technologies and fuels will be required to meet the Nation's short-term and longer-term goals of reducing petroleum use and greenhouse gas emissions. These technologies are developing along different timelines: PHEVs, for example, are commercially available today and do not necessarily require any additional infrastructure—drivers can charge at home using a standard outlet or fuel with gasoline at an existing station, if needed for traveling longer distances. BEVs are also commercially available today but have different infrastructure requirements. Drivers can charge at home overnight using equipment that ranges from $800 to $2,000 installed; cost estimates for public electric charging equipment and installation can vary from $5,000 to $50,000 per charging point, depending on the type of charging (Level 2 vs. DC fast charging) and other factors (noted above). While FCEVs are not yet commercially available, a number of the world's major auto manufacturers have announced initial rollouts in the 2015 timeframe. FCEVs will have different infrastructure requirements than PHEVs and BEVs.

Question. Two weeks ago, at your agency's Quadrennial Technology Review (QTR) Workshop in Knoxville, Tennessee, representatives from hydrogen, fuel cell vehicle, and stationary source fuel cell companies heard Under Secretary for Science Koonin say, in front of 100 people, that fuel cells and hydrogen were left out of the QTR Framing Document to "see what the reaction would be." Do you agree with Under Secretary Koonin's approach to the QTR?

Answer. Under Secretary Koonin has a proven track record of bringing diverse groups together and facilitating vigorous technical discussions, which is why I asked him to lead our first ever QTR.

As you are aware, we released the QTR Framing Document in March, where we provided a first pass at those technologies that are likely to scale up in time to materially impact the President's energy security and environmental goals—and to do so affordably. In view of the multitude of technologies that could be developed and demonstrated, we must set clear priorities within the existing policy framework and establish principles that will enable us to coordinate our research, development, and demonstration (RD&D) efforts with those of the private sector to facilitate timely and material deployment of clean-energy technologies. Consequently, in the initial framing document we left out a number of technologies that are at the experimental stage or face significant technical or multiple infrastructure hurdles. Hydrogen and fuel cells were not the only technologies in that category.

The QTR Framing Document was intended to stimulate discussion and facilitate stakeholder engagement as crucial elements of the QTR process. In response to comments submitted by representatives from hydrogen, fuel cell vehicle, and stationary source fuel cell companies, Dr. Koonin invited a number of them to the vehicle efficiency and electrification workshop in Knoxville, Tennessee on May 4, 2011 and to a clean electricity supply workshop held in Boulder, Colorado on June 7, 2011. The discussion among technical experts across a spectrum of technologies has been invaluable in shaping the QTR team's thinking about the highest and best uses of fuel cells and hydrogen in the Nation's energy future.

Fuel cells for distributed generation were already included as 1 of the 19 technology assessments that form the foundational analysis of the QTR, and hydrogen is considered in our vehicle electrification technology assessment. These technology

[13] http://www1.eere.energy.gov/hydrogenandfuelcells/ pdfs/pathways.pdf.

assessments, which were not released as part of the Framing Document, are expected to be important components of the final report on the QTR.

SAVANNAH RIVER SITE PENSIONS

Question. I have long been concerned about the cost of DOE pensions. The growing costs could very well impact programmatic work throughout the weapons complex. In fiscal year 2012, what is the projected pension obligation across the weapons complex?

Answer. The table below includes the estimated fiscal year 2012 contributions for each National Nuclear Security Administration (NNSA) contractor based on updated information submitted by the contractors during fiscal year 2011.

[Updated estimates as of September 30, 2011]

	2012 NNSA portion
University of California Retirement Plan—Lawrence Berkeley National Laboratory	178
Pension Plan for Eligible Bettis Employees and Retirees [1]	59,500
Pension Plan for Pacific Northwest Laboratories, Battelle Memorial Institute	10,380
BW Y–12 Pension Plan	79,580
Idaho National Laboratory Employee Retirement Plan	7,546
Salaried Employee Pension for KAPL Employees and Retirees [1]	65,000
Pension Plan for KAPL Employees in Participating Bargaining Units [1]	7,100
Kansas City Division (Honeywell International, Inc.) Hourly Employees Pension Plan	9,110
Honeywell Retirement Earnings Plan for Aerospace Employees at the Kansas City Division	26,910
LANS Defined Benefit Pension Plan	71,940
University of California Retirement Plan Livermore	153,900
University of California Retirement Plan—Los Alamos	70,100
National Security Technologies, LLC [NSTec] Employee Retirement Plan	14,490
B&W Pantex Guards Union	3,000
B&W Pantex Metal Trades Council	8,800
B&W Pantex, Non Bargaining	17,800
Sandia Corporation Retirement Income Plan	108,430
Savannah River Nuclear Solutions Multiple Employer Plan	48,747
Pension Plan for Employees at ORNL	5,787
WSI Las Vegas	1,600
WSI Independent Guard Association of Nevada	1,332
WSI Pension Plan for Employees at Oak Ridge, Tennessee	1,159
Battelle Memorial Institute SERP Non-Qualified Plan	2
Bechtel Marine Propulsion Non-Qualified Plan [1]	1,138
KAPL Non-Qualified Plan [1]	229
LANS 401(a)(17) Restoration Plan	4
LANS Restoration Plan	2
LLNS 401(a)(17) Restoration Plan	41
LLNS Restoration Plan	19
Sandia Corporation Non-Qualified Pension Plan	824
Savannah River Nuclear Solutions Non-Qualified Plan	95
Total	774,743

[1] NNSA pension contributions for the five Naval Reactors plans include contributions reimbursed by the Department of the Navy and work for others.

Question. I previously proposed language in the Defense Authorization Act that would require DOE and NNSA to report their pension obligations as a line item in the budget. This would give the Congress a better sense of the cost of pensions on the complex. Do you support this effort? Why not?

Answer. Increased visibility of pension liabilities is a goal the Department supports. However, reporting them as a line item in the budget is not viable due to budget formulation, execution, and accounting concerns. To enhance visibility of pension liabilities, the Department included a separate section on pensions in its congressional budget request for both fiscal year 2011 and fiscal year 2012. This section of the budget provides projected contractor defined-benefit (DB) pension plan contributions for fiscal year 2011 and fiscal year 2012 by plan and by Program Office. For the NNSA, the projected contractor DB pension plan contributions are provided for fiscal year 2010 through fiscal year 2016 by plan.

At the time the Department's budget request is submitted, the Department provides the latest pension contribution estimates available from its contractors. However, the actual amount of the contractors' annual defined benefit pension contribu-

tions is not typically known until the third quarter of the year of budget execution. Projections of future pension contributions are highly sensitive to underlying data, economic conditions, and actuarial methods and assumptions. Thus, the final annual actuarial valuation likely will yield different contribution amounts than the amounts estimated at the time of budget submission. For instance, we are currently preparing the budget submission for fiscal year 2013. At the same time, the contractors are waiting on the actuaries to complete the various analyses to determine the actual payments required for calendar year 2012. Because the budget formulation cycle occurs so far in advance of the pension plan execution year, directly funding pension obligations through a line item is not desirable.

Further, the current methodology of having the pension liabilities collected through indirect cost pools allows the Department to charge all customers doing business at a site for a portion of the pension liability. If pension liabilities were fully "direct funded", the Department would bear the full costs of the liabilities whereas with the current budget and accounting system permits the Department to recover pension costs through overall indirect costs charged to non-DOE customers.

Another disadvantage of "direct funding" the pension liabilities would be a reduction in the contractors' and the Department's ability to quantify the true cost of the work at the site, inclusive of costs for contractor employees' pension benefits. The result would be the loss of a key self-policing aspect of the current approach to funding pensions. In particular, when the true indirect cost of work, including pension costs, is proportionally shared with each site customer, it creates an incentive for contractors to minimize their overall indirect costs insofar as the contractors must keep indirect costs low to attract work from other agencies or entities. If pensions were "direct funded", this market pressure would be largely absent because a large component of total indirect cost pool would be removed from the indirect costs.

One area where the Department does submit a direct request for pension liabilities is for legacy pension benefits. NNSA has a continuing obligation to reimburse the University of California Retirement Plan to fund retirement benefits for University of California (UC) retirees from Los Alamos and Lawrence Livermore National Laboratories. NNSA is unable to recover the costs associated with the liability to the UC through indirect cost pools as NNSA does for pension costs associated with benefit plans sponsored by current NNSA contractors. The difference between the two payment methods is a critical and significant difference that requires the disparate treatment in the budget.

QUESTIONS SUBMITTED BY SENATOR DANIEL K. INOUYE

Question. I wish to thank you and the Department for maintaining the Hawaii office to manage the energy programs and to coordinate with the military, the Department of Energy (DOE), and State endeavors. The office has been invaluable and continues to support the development and implementation of alternative energy policy including those important to State and local efforts, partnerships between military and civilian efforts in the field and new partnership opportunities involving other nations, including Japan. It is my sincere hope that this office will continue in fiscal year 2012 and beyond.

Does the Department have any plans to make meaningful commercial investments in ocean thermal energy conversion (OTEC)? If so, how would the Department mitigate any environmental concerns? What would be the Department's timeframe for such investments?

Answer. As part of the Department's investments in water power technologies, we are currently evaluating the life-cycle costs of OTEC power generation and undertaking a rigorous OTEC resource assessment. The results of these studies will provide important baseline information regarding the potential contribution that OTEC could make to our Nation's renewable energy portfolio, as well as the cost of energy from OTEC. These reports, which will be completed this fiscal year, will serve to inform the Department's investment strategy going forward, and allow us to make appropriate investments across all renewable energy technologies. While OTEC development and production costs are currently estimated to be significantly higher than some other energy technologies, the Department has been pursuing a small number of targeted technology development projects that aim to advance technology readiness, establish a baseline for cost estimates, and improve the cost-competitiveness of OTEC generation.

The Department has been working closely with the National Oceanic Atmospheric Administration (NOAA) and the U.S. Navy in the assessment of OTEC technologies, with a particular focus on the environmental concerns associated with OTEC power generation. In partnership with NOAA, DOE is developing guidelines that consider

the full realm of potential environmental impacts, while also considering potential mitigation strategies. This effort includes a series of workshops with technical, scientific, and environmental experts from within the Federal Government as well as key stakeholder groups. This information will serve to inform our future investment strategy so that any future commercial development is undertaken in an environmentally sustainable manner.

In order to fully evaluate the technical, environmental, and economic performance of a fully integrated, open-ocean OTEC system, it is envisioned that a demonstration project in the range of 10 MW to 100 MW would likely be required. Initial cost estimates for plants of this size are $350 million to $1.1 billion. Given the magnitude of such an investment and the early stage of OTEC technology development, the Department does not envision making any investments in OTEC at this scale in the near future.

Question. Does the Department plan any follow-on competitions to follow-up on the successes from the stimulus investment?

Answer. DOE intends to continue supporting the Pacific Office established in 2010 in Honolulu, Hawaii, and we are pleased with your perception of our accomplishments and progress. In August 2011, the Office of Electricity Delivery and Energy Reliability, with financial support from the Department of Defense (DOD), will be stationing a staff member in the J–9 office of the U.S. Pacific Command (PACOM) to support Command interests in energy and security issues. That staff member and the DOE Pacific Office staff will coordinate efforts with DOD while continuing the 3 years of effort with the State of Hawaii and other U.S. Pacific activities.

Regarding future competitive funding opportunities, the citizens and government of Hawaii will be informed of future announcements. It is our normal practice to competitively award research and deployment projects. We are aware that both the Governor's office and several Hawaii government agencies are routinely exploring and applying for new project grants from DOE.

CONCLUSION OF HEARINGS

Senator ALEXANDER. The hearing is concluded.

Secretary CHU. Thank you.

[Whereupon, at 4:29 p.m., Wednesday, May 18, the hearings were concluded, and the subcommittee was recessed, to reconvene subject to the call of the Chair.]

MATERIAL SUBMITTED SUBSEQUENT TO THE HEARING

[CLERK'S NOTE.—The following testimony was received by the Subcommittee on Energy and Water Development for inclusion in the record.]

PREPARED STATEMENT OF THE ENVIRONMENTAL COUNCIL OF THE STATES

STATE ENVIRONMENTAL AGENCY DIRECTORS SUPPORT FISCAL YEAR 2012 FUNDING APPROPRIATION FOR U.S. DEPARTMENT OF ENERGY'S NUCLEAR CLEANUP WORK

Dear Madam Chairwoman Feinstein and Ranking Member Alexander: We are writing to you on behalf of ECOS, the national nonprofit nonpartisan association of State environmental agency directors.

As you consider appropriation levels for the fiscal year 2012 Federal budget, we urge you to consider the U.S. Department of Energy's (DOE) nuclear clean-up work a funding priority.

DOE has requested that $6.13 billion be appropriated to fund its Office of Environmental Management (EM) for fiscal year 2012 so the agency can remediate hazardous and radiological contamination at sites within the nuclear weapons complex. This figure represents the amount of funding DOE needs to successfully perform cleanup work to levels necessary for meeting its obligations to State governments outlined in cleanup agreements.

On March 24, 2010, the State environmental agency directors passed a resolution urging the Congress to "appropriate the levels of funding necessary to ensure EM annual budgets are fully funded and fully compliant" noting that "stable funding leads to greater efficiencies in cleanup cost and schedule" (see addendum).

Therefore we believe that the Congress should fully fund DOE's fiscal year 2012 budget request for the EM program. DOE has told States that if a lower level of funding is appropriated for fiscal year 2012, cleanup of contaminated soils and groundwater will be delayed.[1]

Cleanup of the nuclear weapons complex represents a large liability to the Federal Government, but this is a liability that continues to shrink as cleanup is achieved at various sites within the complex. As States, we understand what it is like to make tough funding decisions. For this one, we urge you to allow DOE to continue the cleanup work to its conclusion.

Thank you for considering our position as you work toward passing a Federal budget. Please contact R. Steven Brown, executive director of ECOS if you have any questions about this letter.

CLEANUP BUDGETS FOR THE NUCLEAR WEAPONS COMPLEX

WHEREAS, the Nation's nuclear weapons production and research and development activities, conducted largely between the 1940s and 1980s, have left a legacy of hazardous, radiological, and mixed wastes scattered across sites widely referred to as the "nuclear weapons complex" (the "complex"); and

WHEREAS, proper cleanup of the complex is critical for protecting human health and to ensure that damages to natural resources are mitigated and/or compensated for; and

WHEREAS, the complex consists of over 100 sites in 33 States, thereby comprising one of the largest environmental cleanup operations being undertaken in the United States; and

WHEREAS, at least 14 States currently host active cleanup operations spearheaded by the U.S. Department of Energy (U.S. DOE) Office of Environmental Management (EM); and

[1] Presentation to the National Governors Association from Ines R. Triay, Assistant Secretary for Environmental Management, U.S. Department of Energy. May 6, 2011.

VerDate Nov 24 2008 17:29 Dec 28, 2012 Jkt 064597 PO 00494 Frm 00205 Fmt 6601 Sfmt 6621 U:\2012HEAR\10HEAR\10MY18DOE.TXT 64597

WHEREAS, State environmental agencies are regulators with U.S. EPA and U.S. DOE, and may oversee cleanup operations within the complex as established by Federal Facility Agreements (FFAs), permits, and consent orders under FFCA, CERCLA, RCRA, and other laws; and

WHEREAS, some sites within the complex, including the Ohio Fernald and Colorado Rocky Flats sites, have benefited from accelerated cleanups that have generated cost savings from reduced future maintenance costs that were not redirected toward other site cleanups within the complex; and

WHEREAS, the influx of funding from the American Recovery and Reinvestment Act of 2009 (ARRA) has provided for further acceleration of nuclear and hazardous waste cleanups as well as decontamination and demolition of obsolete facilities within the complex; and

WHEREAS, recently completed cleanups have shrunk the footprint and overall size and presence of nuclear weapons complex sites within the States; and

WHEREAS, notwithstanding these recent successes, continued cleanup of the complex remains a priority issue for the States; and

WHEREAS, stable funding leads to greater efficiencies in cleanup cost and schedule for both U.S. DOE and the States.

NOW, THEREFORE, BE IT RESOLVED THAT:

ECOS strongly supports continued environmental cleanup of the nuclear weapons complex.

ECOS recommends that U.S. DOE continue cleaning up the nuclear weapons complex and maintain a strong forum for communication and planning with State oversight officials via ECOS.

ECOS urges U.S. DOE officials to request fully funded, fully compliant annual budgets for the EM program to ensure enough funds are provided to all sites to achieve cleanup milestones on schedule as required by FFAs, permits, and consent orders.

ECOS urges the U.S. Congress to appropriate the levels of funding necessary to ensure EM annual budgets are fully funded and fully compliant as just described.

ECOS urges U.S. DOE to establish mechanisms whereby any cost savings that result from accelerated cleanups are recouped and redirected toward funding other site cleanups within the nuclear weapons complex, and

This resolution will be transmitted to the U.S. Congress, the Secretary of Energy, the Assistant Secretary of Energy for Environmental Management, the National Governors Association, and other stakeholder groups.

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2012

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

NONDEPARTMENTAL WITNESSES

[CLERK'S NOTE.—The subcommittee was unable to hold hearings on nondepartmental witnesses. The statements and letters of those submitting written testimony are as follows:]

DEPARTMENT OF DEFENSE—CIVIL

DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS—CIVIL

PREPARED STATEMENT OF THE BOARD OF COMMISSIONERS, FIFTH LOUISIANA LEVEE DISTRICT

The Board of Commissioners for the Fifth Louisiana Levee District respectfully requests that construction funding for Mississippi River levees be increased from the $24,180,000 contained in the proposed budget for fiscal year 2012, to the U.S. Army Corp of Engineers' (COE) capability of $59,980,000.

Reduced funding, combined with the inability to let construction contracts under a continuing contract clause, has left thousands of people in Louisiana vulnerable to the adverse effects of a deficient levee system. Construction of levee enlargements is essential if the levee is to contain the "Project Flood" which is estimated to be 20 percent greater than the record Flood of 1927.

The effect of fully funded contracts for levee construction, now required under Public Law 109–103, (sections 106 and 108), adopted by the 109th Congress in 2005, as opposed to the previous system of continuing contract clauses, has virtually halted enlargement of the Mississippi River levee system in Louisiana. Year after year, as the cost of projects and maintenance has increased, funding for levee systems and flood control has been reduced. The current proposed budget is no exception, with only $210 million allocated for the entire Mississippi River and Tributaries (MR&T) project. We request that be increased to COE's capabilities of $335 million.

Since the MR&T project was established, less than $11 billion has been invested. This investment provides benefits far beyond their actual cost to the taxpayer by offering protection to the 4 million citizens, 1.5 million homes, 33,000 farms, and countless vital transportation routes from destructive floods.

With the help of the Congress, great progress has been made in the Mississippi River Valley over the years, but there is still much to be done, and because of that, we urge the Congress to increase funding to COE in fiscal year 2012, to ensure that COE is not forced to halt or delay contracts for levee construction essential to the well-being of this Nation. It is vital that the MR&T project(s) be completed at the earliest possible date. This can only be accomplished through adequate funding and repeal of the mandate for contracts to be fully funded prior to the beginning of construction.

VerDate Nov 24 2008 17:29 Dec 28, 2012 Jkt 064597 PO 00494 Frm 00207 Fmt 6601 Sfmt 6621 U:\2012HEAR\10HEAR\NDP.TXT 64597

PREPARED STATEMENT OF THE BOARD OF LEVEE COMMISSIONERS FOR THE YAZOO-MISSISSIPPI DELTA

Is this Nation's heartland worth preserving? Will the richest and most fertile farmland in the world be allowed to simply wash away? Are the lives and livelihoods of America's bread basket somehow now less important?

These are the questions we must ask ourselves even in this time of great economic uncertainty, with opinions and counter-opinions churning and Americans seemingly divided as surely as this continent's greatest river bisects it.

And after asking them, then we must remember that some truths really are self-evident.

As we move forward with what we realize necessarily must be a new approach to flood control and its funding in the years ahead, we urge you not to lose sight of what has been the enormous success of the Mississippi River and Tributaries (MR&T) project, a project which has made life as we know it in middle America possible. The land in and around the Mississippi River Valley has proved to be the most bountiful on Earth. Not only is it home to the salt-of-the-Earth men and women who populate it, but it is also the producer of an increasingly important slice of the U.S. export pie—the food and fiber that clothe this country and the rest of the world.

We understand the political and economic reality which dictates that now, more than perhaps ever before, every Federal dollar is critical and every expenditure must be prioritized. But then what priority of government is more critical than the protection of its people and the wealth that they produce?

The administration proposes fiscal year 2012 funding for the MR&T project, one of our great continuing successes, with an almost unprecedented benefit-to-cost ratio, at $210 million, once again less than the Congress appropriated last year and substantially less than the Corps of Engineers' (COE) capability. But in such matters the founding fathers saw fit to give the Congress the last word, and so we urge you to fund the MR&T umbrella of needed public works at COE's capability level of $335 million.

Honorable Members of Congress, there is a simple truth in our region of this country: The Mainline Mississippi River Levee makes life and development possible within the Mississippi Delta. Therefore it is nothing less than our duty to ask you to fund Mississippi River levees construction at $77.73 million and their maintenance at $15.781 million. A paramount priority to our levee board is the Upper Yazoo Projects which we sponsor, not only a much needed endeavor, but a rare one, as well, in that it faces no environmental opposition. We urge you to advance its completion in the amount of $14.2 million.

Mississippi's four flood control reservoirs have marked another MR&T project success, but it concerns us that they are aging, and we request the appropriation of $34.759 million for their continued maintenance.

Also critical to us is the Delta Headwater Project, which helps to prevent our Delta streams from filling with eroded soils from the hills. We ask that it be funded at $23.2 million.

We would also request that these other pieces of the flood control puzzle in our area be funded as follows:

Channel Improvements.—$73.270 million;
Big Sunflower River.—$2.5 million;
Main Stem.—$25,000;
Yazoo Basin Reformulation.—$1.2 million;
Channel Maintenance.—$89.936 million;
Channel Improvement Dredging.—$18.029 million;
Channel Improvement Dredging—Memphis.—$12.430 million;
Channel Improvement Dredging—Vicksburg.—$5.023 million;
Revetments and Dikes.—$71.907 million;
Big Sunflower Maintenance.—$985,000;
Main Stem Maintenance.—$6.248 million;
Tributaries.—$1.286 million; and
Whittington Auxiliary Channel.—$494,000.

And finally, Members of Congress, we have all been shocked and sickened by the death and devastation resultant from the recent earthquake in Japan. And so we would remind that the strongest recorded earthquake on the North American continent, occurred exactly 200 years ago—not in California, but along the New Madrid Fault in Missouri. Any such event today would make the amount of this needed funding request look like child's play, so we urge you to also allocate necessary attention and funding to earthquake research and preparedness.

PREPARED STATEMENT OF THE BOARD OF MISSISSIPPI LEVEE COMMISSIONERS

Mr. Chairman and members of the subcommittee: This statement is prepared by Peter Nimrod, Chief Engineer for the Board of Mississippi Levee Commissioners, Greenville, Mississippi, and submitted on behalf of the Board and the citizens of the Mississippi Levee District. The Board of Mississippi Levee Commissioners is comprised of seven elected commissioners representing the counties of Bolivar, Issaquena, Sharkey, Washington, and parts of Humphreys and Warren counties in the Lower Yazoo Basin in Mississippi. The Board of Mississippi Levee Commissioners is charged with the responsibility of providing protection to the Mississippi Delta from flooding of the Mississippi River and maintaining major drainage outlets for removing the flood waters from the area. These responsibilities are carried out by providing the local sponsor requirements for the congressionally authorized projects in the Mississippi Levee District. The Mississippi Levee Board and the Mississippi Valley Flood Control Association support an appropriation of $335 million for fiscal year 2012 for the Mississippi River and Tributaries (MR&T) project. This is the minimum amount that we consider necessary to allow for an orderly completion of the remaining work in the Valley and to provide for the operation and maintenance, as required, to prevent further deterioration of the completed flood control and navigation work.

It is apparent that the administration loses sight of the fact that the MR&T project provides protection to the lower Mississippi valley from waters generated across 41 percent of the continental United States. These waters flow from 31 States and 2 provinces of Canada and must pass through the Lower Mississippi Valley on its way to the Gulf of Mexico. We will remind you that the MR&T project is one of, if not the most cost-effective project ever undertaken by the U.S. Government. The foresight of the Congress in their authorization of the many features of this project is exemplary.

The many projects that are part of the MR&T project not only provide protection from flooding in the area, but the award of construction contracts throughout the Valley provides assistance to the overall economy of this area. The employment of the local workforce and purchases from local vendors by the contractors help stabilize the economy in one of the most impoverished areas of our country.

We are concerned about the "earmark moratorium" that the Congress has adopted for the next 2 years. Basically the Congress has essentially given up their right to appropriate money. They have relinquished this right to the Office of Management and Budget (OMB). OMB always provides a budget that undercuts our projects in the MR&T project because they know that the Congress will provide "congressional adds". Unfortunately people think that the "congressional adds" for the MR&T project are "earmarks". "Earmarks" account for less than 1 percent of the entire Federal budget, but it is these "earmarks" that provide money for much-needed and essential projects and provide jobs for the economy. The stimulus money spent the past 2 years created jobs, built projects and stimulated the economy. This ban on "earmarks" will cause many projects to be stopped, jobs will be lost and the economy will fall right back into a recession. The Congress needs to define what an "earmark" is and they need to be able to do "congressional adds" for our projects.

Thanks to the additional funding provided by the Congress over the last several years over and above the administration's budget, work on the Mainline Mississippi River Levee Enlargement Project is continuing. Of the original 69 miles of deficient levees in the Mississippi Levee District, 32 miles of work have been completed and 8.1 miles are currently under contract. We are requesting $77.73 million for construction on the mainline Mississippi river levees in the Lower Mississippi Valley Division which will allow the Vicksburg and Memphis districts to keep existing contracts on schedule and award contracts to avoid any future unnecessary delays in completing this vital project. We are all well aware that the Valley some day will have to endure a Project Flood, we just don't know when. We must be prepared.

The President's fiscal year 2011 budget did not include funding for any construction projects within the Yazoo Basin. This action is especially difficult to understand during a time when our Nation needs an economic boost. These are all projects authorized and funded so wisely by the Congress. All of these projects are encompassed in the footprint of the Delta Regional Authority, an area recognized by the Congress as requiring special economic assistance to keep pace with the rest of our great Nation. We can not lose sight of the fact that all of these projects are required to return more than a $1 in benefits for each $1 spent.

The recommended plan for the Yazoo Backwater Project includes a pump that will lower the 100-year-flood event by 4.5 feet thereby reducing urban and rural structural damages, providing benefits to the remaining agricultural lands, and reducing the frequency and duration of floods. The plan also includes reforestation easements

to be purchased on up to 55,600 of existing agricultural land which will provide benefits in every environmental category—wetlands, terrestrial, aquatics, and waterfowl resources as well as vastly improving water quality. This is a model project that should be the standard for future public works projects in the United States. On August 31, 2008, the Environmental Protection Agency (EPA) wrongly used its authority under section 404(c) of the Clean Water Act (CWA) to veto the Yazoo Backwater Project even though it is exempt by section 404(r) of the CWA. The Mississippi Levee Board is currently engaged in a lawsuit against EPA asking the Federal court to determine if this project is indeed exempt from an EPA 404(c) veto by the exemption in section 404(r) of the CWA. The administration has ordered the cancellation of $57 million in reserves for the Yazoo Backwater Project. If we lose this money, we will have to start from scratch with the appropriations cycle. Please do everything you can to keep the $57 million for the Yazoo Backwater Project and prevent this cancellation from happening. These funds will allow COE to begin acquisition of the reforestation easements and initiate the award of the pump supply contract. These funds were appropriated to solve flooding in the South Mississippi Delta, therefore, they should be used to alleviate flooding in the Mississippi South Delta.

We are requesting $4.575 million for the Yazoo Backwater less Rocky Bayou Project. This money will be used to start the Environmental Impact Statement for the Yazoo Backwater Levee Enlargement Project. This levee is designed to overtop during a project design flood, but it needs to be raised 7 feet to get to the required elevation. Today, this levee will not be sufficient if we get a flood on the Mississippi River greater than the 100-year event.

Work on the Big Sunflower (Upper Steele Bayou) Project has proved to be very beneficial. The Steele Bayou Sedimentation Reduction Project has installed drop-pipe structures at headcut locations all along Steele Bayou. These control structures stop the movement of sediment into Steele Bayou. Sediment is bad for flood control and water quality. We are requesting $2.5 million to keep this project moving forward.

Work on the Delta Headwaters Project has proven effective in reducing sediments to downstream channels. To discontinue this project will only diminish water quality by increasing sediment, reducing the level of flood protection to the citizens of the Delta and increasing required maintenance. We are requesting $23.2 million to continue this project.

Maintenance of completed works can not be overlooked. The four flood control reservoirs overlooking the Delta have been in place for 50 years and have functioned as designed. Required maintenance must be performed to avoid any possibility of failure during a flood event. We are asking for $6.841 million for Arkabutla Lake; $7.174 million for Enid Lake; $8.051 million for Grenada Lake; and $12.693 million for Sardis Lake.

We are requesting $15.781 million for maintenance of the mainline Mississippi river levees in the Lower Mississippi Valley Division which will provide for repair of levee slides, slope repair, and repair of the gravel maintenance roadway which is so vital to access during high water.

The Mississippi River and our ports and harbors need money for maintenance dredging. The Mississippi River carries tons of sediment every second. This sediment falls out in slack water areas such as entrances to our ports and harbors. The Greenville Port needs $1 million and the Vicksburg Port needs $750,000 to perform annual maintenance dredging. This dredging is vital to keep these ports open during the low-water season when much of the farm harvest is ready to be transported.

We are requesting $3.03 million for the Lower Mississippi Valley Division for Collection of basic data under general investigations. This money is used to monitor and collect water-quality samples at gaging stations located throughout the Mississippi Delta. With the emphasis on water quality, water quantity, and Total Maximum Daily Loads (TMDLs), we must be able to continue to collect good data on water quality so we can get a baseline established to be able to monitor and improve water quality in the Mississippi Delta. Improvements in water quality in the Mississippi Delta will translate into improved water quality in the Gulf of Mexico and help the gulf hypoxia issue.

EPA has been given too much power under section 404(c) of the CWA which allows EPA to veto congressionally authorized projects. During the early 1990s, due to abuse of the 404(c) power by EPA, the Congress considered removing this authority from EPA. EPA has again invoked this veto power on the Yazoo Backwater Project. EPA is saying that you cannot lower the water level with a flood control project. By killing this project with 404(c) veto authority, EPA is drawing a line in the sand over the future of flood control in our great Nation. EPA has vetoed the Yazoo Backwater Project even though it was approved, authorized and funded by

the Congress and exempt from a 404(c) veto by 404(r). It is now time to again take up this issue and remove the 404(c) veto power from EPA before they kill another flood control project that has been authorized by the Congress.

The Council of Environmental Quality draft proposal of changes to the Principals and Guidelines for Federal agencies fails to establish a clear, concise, and workable framework to guide development of water resources projects. It is incoherent and inconsistent—and thus not implementable in a practical sense. It substantially fails to comply with the explicit directions in section 2031 of WRDA of 2007 as well as the large body of previous law and policy related to water resources. It is written so as to not require or even encourage use of proven analytical tools to distinguish among alternatives. It elevates environment considerations over economic benefits, social well-being and public safety. Because of these critical and extensive failings, we recommend that this effort be put aside and restarted from the beginning.

As Members of Congress representing the citizens of our Nation who live with the Mississippi River everyday, you clearly understand both the benefits provided by this resource and the destructive force that must be controlled during a flood. On behalf of the Mississippi Levee Board, I can not express enough, our appreciation for your efforts in providing adequate funding over the last several years that has allowed construction to continue on our much needed projects and thank you in advance for your kind consideration of our requests for fiscal year 2012.

PREPARED STATEMENT OF THE CITY OF MORRO BAY, CALIFORNIA

The city of Morro Bay is providing testimony to the Senate Subcommittee on Energy and Water Development to respectfully request that funding of $2.5 million be included in the fiscal year 2012 budget for the Army Corps of Engineers (COE) to dredge the Entrance/Transition channels in Morro Bay Harbor and to fund a condition survey of the North Breakwater.

During World War II COE designed and constructed a new harbor entrance at Morro Bay with two rock breakwaters. Since the initial construction, more than 60 years ago, the Federal Government has maintained the harbor entrance, breakwaters, and navigational channels. In fiscal year 1995, COE completed the Morro Bay Harbor Entrance Improvement Project to improve safety for commercial fishing and coastal navigation. The city of Morro Bay contributed almost $1 million in local cost share to this project.

Since 1995 the Federal Government has funded maintenance dredging of Morro Bay Harbor entrance area every year and schedules a larger project to maintain the Morro and Navy Navigation channels every 3 to 5 years, as those channels accumulate sediment at a slower rate than the entrance area.

Below is a summary of dredging history for the federally designated navigation channels in Morro Bay.

Date	Area dredged	Cubic yardage
1997	Outer entrance	63,009
1998	Entrance, main, Navy, Morro, and sand trap	695,080
1999	Entrance and transitional channel	134,234
2000	Entrance and transitional channel	236,883
2001	Entrance and transitional channel	180,467
2002	Entrance, Navy, Morro, and sand trap	868,483
2003	Entrance and transitional channel	170,817
2004	Entrance and transitional channel	155,708
2005	Entrance and transitional channel	133,989
2006	Entrance and transitional channel	196,237
2007	Entrance and transitional channel	150,581
2008	Entrance and transitional channel	140,789
2009	Entrance and transitional channel	151,067
2010	Entrance, main, Navy, Morro, and sand trap	823,749

A condition survey of the North Breakwater has not been completed since 1986. Since that time Morro Bay Harbor was subject to effects from the San Simeon Earthquake of 2003, the Chilean Tsunami of 2010, and the recent Japanese Tsunami of 2011. In March 2011, the Morro Bay Harbor saw 9-foot surges and large waves at the entrance area during the Tsunami generated by a 9.0 earthquake centered in Japan. Due to the long period of time since the last condition survey and to the unusual stresses the breakwater has been subject to, we feel it is critical to complete this condition survey of the North Breakwater in fiscal year 2012.

Morro Bay Harbor is the only all-weather harbor of refuge between Santa Barbara and Monterey along the rough waters of California's central coast. Our Harbor directly supports almost 250 home-ported fishing vessels and marine dependent businesses. We provide critical maritime facilities for both recreational and commercial interests. Businesses that depend on the harbor generate $50,000,000 annually and employ more than 700 people. In addition to the home-ported commercial fishing vessels, Morro Bay Harbor serves as port for 15–25 additional fishing vessels either transiting the coast, or here to fish during certain seasons. More than 400 recreational vessels come through Morro Bay Harbor while transiting the California coast.

The United States Coast Guard (USCG) maintains a 27-person National Security Base and Search and Rescue Station at Morro Bay Harbor, which provides Coast Guard services for the entire central California coast, including port safety coverage for the Diablo Canyon Nuclear Power Plant and Vandenberg Air Force Base.

The California State Department of Fish and Game home ports their 65-foot enforcement vessel *Blue Fin* in Morro Bay. The *Blue Fin* enforces Federal and State Fish and Game regulations from Monterey to the Channel Islands and out 200 miles. The Fish and Game Department has an agreement with USCG to assist them with homeland security within this area as well. The *Blue Fin* is also made available through mutual aid agreements to all other law enforcement agencies, for enforcement assistance and search and rescue operations. It is vital that these vessels be able to safely transit the Morro Bay Harbor entrance and navigate within the Harbor to perform their missions.

The Morro Bay Harbor Patrol provides routine and emergency response to boaters within Morro Bay Harbor and responds to incidents as far as Montana de Oro to the south and Cambria to the north. The Morro Bay Harbor Patrol provides assistance to USCG, the Morro Bay National Estuary Program, the California Department of Fish and Game, the California Department of Parks and Recreation and San Luis Obispo County.

In 2000 the California legislature designated Morro Bay and several other small ports along the California coast as "Harbors of Safe Refuge". This legislation recognizes the critical role many small harbors play in affording a safety zone for commercial and recreational vessels transiting the California coast.

Morro Bay Harbor's configuration exposes the entrance to the open ocean and strong winter storms, creating swells and currents that constantly carry sand and sediment into the navigation channels. The Morro Bay National Estuary Program recognizes the need to maintain the navigational channels in the harbor not only for the safe access of emergency and fishing vessels, but also to maintain adequate tidal exchange for the health of the Morro Bay Estuary.

Morro Bay is a city of 10,000 people, with a total annual operating budget of approximately $25 million. We are almost entirely reliant on tourism and a small fishing fleet for our revenue. The city simply cannot afford to maintain the harbor without continued Federal assistance. If the channels are not dredged, all of the past local and Federal investment will be lost. It is imperative that the federally constructed navigation channels, entrance area, and protective jetties be maintained on a consistent schedule.

COE has the capability to execute $2.5 million in maintenance dredging operations and a North Breakwater condition survey for fiscal year 2012. We respectfully request that your distinguished subcommittee include $2.5 million in funds for Morro Bay to keep our harbor open and safe in all conditions, to provide a safe base of operations for USCG, California Department of Fish and Game, and the Morro Bay Harbor Patrol, and to protect the health of the Morro Bay National Estuary.

Thank you for your actions and support, and for the opportunity to present these requests to your subcommittee on behalf of the citizens of the city of Morro Bay.

PREPARED STATEMENT OF ENVIROSCIENCE, INC.

To the honorable members of the Senate Subcommittee on Energy and Water Development: I am writing in support of continued, and indeed, expanded appropriations for the Corps of Engineers (COE) Aquatic Plant Control and Research Program (APCRP). My company EnviroScience, Inc. is a small environmental consulting firm engaged in the practical control of aquatic invasive plant species throughout the United States. For more than a decade, EnviroScience, its clients and the entire aquatic plant industry has benefitted from the research and technology transfer functions carried out by this COE program.

Although I understand you are faced with complex and difficult decisions with regard to our Nation's budget, continued funding of this program and the research ac-

tivities of the APCRP is critical to the fight against aquatic invasive species which I believe is one of the most important environmental issues our country faces over the next several decades. I see first-hand the tremendous impact these aquatic invasive plants have on recreational, public health, and property values. Every day I deal with lake communities whose property has been devalued by aquatic invasive plants like Eurasian watermilfoil, an invasive nuisance species that now infests countless thousands of waterbodies in every continental State.

Exotic invasive aquatic plants like water chestnut, Eurasian watermilfoil, and hydrilla, are continuing to expand their ranges virtually unchecked. There is a critical need for more and better information on these species and appropriate control methods. In my opinion, the APCRP has been the best single source of this information over the years. APCRP also plays a critically important role in researching basic ecology, biological control, and native plant restoration. Unlike herbicide research, these are research areas that won't be supported by private industry, but are nonetheless very important in the ongoing struggle to understand and control these species.

In all honesty, we haven't done a very good job of keeping these species out of our Nation's waterways, nor are State or Federal agencies able to fund the actual control of these species. At the very least, I believe the Federal Government should be a repository for current information on these invasive pests, and continue to sponsor and conduct research into environmentally sound control methods.

In conclusion, I urge you to support funding for the APCRP program at a minimum level of $4 million per year and thereby help ensure that COE remains a frontline defense in our Nation's fight against these unwanted invaders.

PREPARED STATEMENT OF THE IZAAK WALTON LEAGUE OF AMERICA

The Izaak Walton League of America appreciates the opportunity to submit testimony concerning appropriations for fiscal year 2012 for programs under the jurisdiction of the subcommittee. The League is a national, nonprofit organization founded in 1922. We have approximately 38,000 members and more than 250 local chapters nationwide. Our members are committed to advancing common sense policies that safeguard wildlife and habitat, support community-based conservation, and address pressing environmental issues. The following pertains to programs administered by the U.S. Army Corps of Engineers (COE).

U.S. ARMY CORPS OF ENGINEERS, OPERATIONS AND MAINTENANCE, MISSOURI RIVER

The League joins the Missouri River Association of States and Tribes (MoRAST), among other groups, in urging the subcommittee to appropriate $72.89 million in fiscal year 2012, as requested by the President, for the Missouri River Recovery Program. With this funding, COE, U.S. Fish and Wildlife Service (FWS), States, and other partners can continue important ecosystem restoration efforts that are producing long-term ecological and economic benefits.

The Missouri River basin encompasses land in 10 States covering one-sixth of the continental United States. The Missouri, America's longest river, is one of the most altered ecosystems on Earth. Although recovery and restoration efforts are on-going, much more needs to be done. League members, especially those in Iowa, Nebraska, and South Dakota, want to see the recovery efforts continue and expand.

COE, FWS, and many State agencies have been working to restore habitat for fish and wildlife along the river. This work is critical for the Interior Least Tern and Pallid Sturgeon, listed as endangered, and the Piping Plover, listed as threatened, under the Endangered Species Act. The restoration efforts also benefit many other species of fish and wildlife throughout the region.

Studies conducted by the FWS show that over twice as many fish species are utilizing the created shallow water habitat areas compared with the section of the river with a dredged channel. COE's study also shows that the emergent sandbar habitat projects have had tremendous response from nesting terns and plovers. These habitat restoration projects are working with the river—not against it.

These projects also generate additional economic activity in communities along the river. Anglers, hunters, boaters, birdwatchers, and others have been using these areas proving the old adage "if you build it, they will come." In a recent report, the Missouri Department of Conservation and the Nebraska Game and Parks Commission found recreational spending provides $68 million in annual economic impact to communities along the Missouri River from Yankton, South Dakota to St. Louis, Missouri. A South Dakota Game, Fish, and Parks study shows that recreational benefits from angling on the Missouri River account for more than $107 million in

annual economic activity in the Dakotas and Montana. These projects are bringing more people to the river throughout the Missouri basin.

In addition to the economic boost from tourism, restoration projects, including building sandbars, support job creation throughout the entire region. To perform this work, COE contracts with local construction companies, creating or maintaining jobs, and injecting dollars into local economies through purchases of materials, fuel, food, and lodging. With the funding requested, COE could readily implement more of these important economic and river restoration projects.

Missouri River Authorized Purposes Study.—The League also urges the subcommittee to continue to provide $5 million for the Missouri River Authorized Purposes Study (MRAPS), and to oppose extraneous policy "riders" that would curtail or cancel this critical assessment. The MRAPS will, for the first time, review the eight authorized Missouri River project purposes established by the Flood Control Act (FCA) of 1944. This study will analyze the purposes in terms of what is best for the American taxpayer, the people within the entire basin, fish and wildlife, and today's economic values and priorities, rather than those of nearly 70 years ago.

COE is working collaboratively with tribes, Federal and State agencies, and other stakeholders within the Missouri River Basin and along the Mississippi River on this historic study—this has never happened before.

The eight authorized purposes—flood control, hydropower, recreation, fish and wildlife, irrigation, water supply, water quality, and navigation—have not been reviewed since the Congress passed the FCA in 1944. In essence, the Missouri is operating on a 67-year-old business plan. This review is urgently needed and long overdue for the American taxpayer.

The Missouri River basin is very different today than what was envisioned in 1944. Some of the authorized purposes meet or greatly surpass expectations from decades ago. Currently, recreational uses of the river dramatically exceed original expectations while other purposes, particularly navigation, have fallen far short. In spite of these changes, river management mostly favors navigation. This outdated and unbalanced approach is especially in need of review when one considers that navigation is being maintained largely to accommodate one commodity. According to the General Accounting Office (GAO), sand and gravel accounted for 84 percent of total tonnage shipped by barge on the Missouri between 1994 and 2006. Moreover, GAO found that 54 percent of all sand and gravel was transported for 1 mile or less. Today, in part because the purposes in the 1944 Flood Control Act have not been modernized, the river is being managed to move sand less than a mile rather than for more diverse and beneficial purposes.

Continued full funding of MRAPS is a smart investment. A comprehensive review and accompanying changes will streamline future COE operational expenses. This will save tax dollars and bring Missouri River management into the 21st century.

U.S. ARMY CORPS OF ENGINEERS, OPERATIONS AND MAINTENANCE, UPPER MISSISSIPPI RIVER

The League is an active and long-time proponent of restoring the Upper Mississippi River (UMR) ecosystem. We have supported the Environmental Management Program (EMP) since its inception and continue to support this vital restoration program. We urge the subcommittee to provide $33.2 million for EMP in fiscal year 2012 as authorized by the Water Resources Development Act (WRDA). Although we are encouraged by the President's request for fiscal year 2012, pressing restoration needs on-the-ground require at least the full amount authorized for EMP.

The League has also strongly expressed its opinion that the large-scale navigation modifications included in the recommended plan for the Upper Mississippi Navigation and Ecosystem Sustainability Program (NESP), as authorized by the WRDA of 2007, have not been justified by COE and should not be pursued. Previous reviews by the National Academy of Sciences and the Assistant Secretary of the Army, Civil Works found that the navigation construction component of NESP was not economically justifiable. A report released last year by the Nicollet Island Coalition, of which the League is a member, provides additional evidence that proposed locks and dams in this region are not a good investment for American taxpayers. With this in mind, the League supports the administration's decision not to request funding for NESP in fiscal year 2012.

The League has strong roots in the Upper Mississippi River region. Protecting the basin has been a key issue for our members since we led the fight to create the Upper Mississippi River Fish and Wildlife Refuge in 1924. The League has spearheaded efforts to reform the lock and dam navigation system to ensure that flows and habitat remain as natural as possible. We also work to promote sustainable ag-

riculture practices and implement farm conservation programs to reduce polluted runoff. Our testimony reflects many decades of experience on the Upper Mississippi River and our direct 15-year involvement with the Upper Mississippi River—Illinois Waterway (UMR–IWW) navigation study.

The Upper Mississippi River is one of the most complex ecosystems on Earth. It provides habitat for 50 species of mammals, 45 species of reptiles and amphibians, 37 species of mussels, and 241 species of fish. The need for ecosystem restoration is unquestionable. As COE correctly stated in its study of navigation expansion, this ecosystem is "significantly altered, is currently degraded, and is expected to get worse." Researchers from the National Academy of Sciences have determined that river habitat is disappearing faster than it can be replaced through existing programs such as EMP, which was authorized at $33.2 million annually by the Congress in 1999, but has never received full appropriations. As habitat vanishes, scientists warn that many species will decline and some will disappear.

Our Nation relies on a healthy Mississippi River for commerce, recreation, drinking water, food, and power. More than 12 million people annually recreate on and along the Upper Mississippi River spending $1.2 billion and supporting 18,000 jobs. More people recreate on the Upper Mississippi than visit Yellowstone National Park. Notably, barge traffic has remained static on the river for more than two decades with real declines in recent years.

In assembling the UMR–IWW navigation study, COE recognized the critical need for ecosystem restoration and encouraged the Congress to invest approximately $130 million annually in Upper Mississippi River habitat restoration efforts. With this demonstrated need in mind, the League strongly encourages the subcommittee to prioritize investment in ecosystem restoration by appropriating $33.2 million for the EMP in fiscal year 2012. Appropriating additional funding for restoration will support economic development and job creation in communities along the UMR and provide long-term conservation and economic benefits for the region and the Nation.

We appreciate the opportunity to submit this testimony and look forward to working with the subcommittee to strengthen the investment in ecosystem restoration and recovery along the Upper Mississippi and Missouri Rivers.

PREPARED STATEMENT OF THE MISSISSIPPI VALLEY FLOOD CONTROL ASSOCIATION

The Mississippi Valley Flood Control Association respectfully requests that the sum of $335 million be appropriated in fiscal year 2012 for the Mississippi River and Tributaries Project.

The Flood Control Association was first organized in 1922 by a group of interested citizens from the States of Arkansas, Mississippi, and Louisiana. From that first meeting, held in Memphis, Tennessee, a delegation was selected to come to Washington in an attempt to convince both the Congress and the executive branch that the prevention of catastrophic floods in the lower Mississippi River valley was beyond the capabilities of the local people and was in fact too large for any group other than the Federal Government. This group of dedicated citizens was without success until the record flooding of 1927 swept through the Mississippi River valley with a fury of devastation not seen before. An unknown number of people perished, along with thousands of head of livestock and large numbers of many species of wildlife. Some 7 percent of all the productive land on this planet was under water for a period of almost 6 months. The Congress, after extensive hearings, passed the Flood Control Act of May 15, 1928, which was then signed into law by President Calvin Coolidge.

The Flood Control Association then disbanded, acting under the erroneous assumption that the United States Government would provide whatever was needed to prevent flooding in the valley. In 1935 it became apparent that additional legislation was required and the Association, under the leadership of Senator John Overton from Louisiana, was reorganized. It has been in continuous and active existence since, some 76 years.

We have been fortunate since 1935 to have as our president and two vice presidents Members of the United States Congress with Congressman Mike Ross from the State of Arkansas serving as our president and Senator Roger Wicker from Mississippi and Congressman Blaine Luetkemeyer from Missouri serving as our vice presidents.

We are a nonprofit agency made up of levee boards, drainage districts, harbor and port commissions, States, cities and towns, including many other agencies and individuals that have an interest in the protection and betterment of the people and property in the Mississippi River Watershed, the third largest in the world. But we feel it is the greatest, because of its size coupled with its essential usefulness to the

well-being of our Nation. In a few words we are an agency through which the local people may speak and act jointly on all flood control, bank stabilization, navigation, and major drainage problems.

Never before have we seen our Nation faced with such huge public debts and budget deficits as we do today. In our daily life we are made aware of the gut-wrenching sadness of seeing homes foreclosed and jobs disappear. We know all those things but we also know that the country that is and has been for generations the bright light of freedom and prosperity, must not and cannot let its infrastructure deteriorate and fall into ruin; neither can we allow one of our vital forms of transportation to become underutilized or useless due to the lack of proper and necessary maintenance.

Unfortunately today, as usual, you are considering a budget request from the executive department that has insufficient funding to prevent either of the cases just outlined. The only recourse we have is to request the Congress do as you have always done, add the necessary supplemental funds to protect the lives, property, and livelihoods of the citizens of this great river basin.

Earlier in this statement it was said that the Mississippi River Watershed that provides drainage for 41 percent of the Nation, moves almost 1 billion tons of commodities—60 percent of our grain, 25 percent of our petroleum products and 20 percent of the coal to fire our powerplants, was the greatest watershed on the planet because of its size coupled with its usefulness. Useful because the river has been controlled and improved beginning with the first levee for flood protection built in New Orleans, Louisiana, in 1717. Levees came early because "Without flood control, nothing else matters." Over the years the Congress, the Corps of Engineers and the local people have worked together to make the Mississippi River Watershed, stretching from New York in the east to Montana in the west and from the Canadian border to the Gulf of Mexico, the greatest and the envy of the developed world.

Our great country has always been a maritime nation, almost totally dependent during the earliest years on the oceans and unimproved waterways to move our commerce including, at that time in history, our people. Westward expansion used the rivers whenever possible, and many of the earliest construction projects in the new country were the building of canals connecting commercial waterways. Our national security and economic well-being has always, now more than ever, depended on the seas, lakes, and inland waterways that give us accessibility to every corner of our great Nation.

All improvements, great or small, sooner or later require maintenance. We have been too lax in this great country with maintaining and improving our basic forms of transportation. We have not built new airports to keep up with the demand of our growing population nor have we improved and properly maintained those that we have. Our system of railroads is in such bad shape that we no longer even attempt to move human cargo by train except for a very few small, densely populated areas of the country. The interstate highway system that we constructed more than 50 years ago was a great source of pride, but we failed again to properly maintain it, and now we are paying a tremendous price to keep it functioning. A great majority of our waterway improvements, including our locks and dams and flood control facilities, are well past their design life. Soon we will find ourselves in emergency mode, repairing and replacing failures. This will be very expensive and an economic disaster. Farmers will be especially hard hit, with no efficient and economical way to transport their crops to international markets.

Our principal, but certainly not our only concern, is with the funding of the Mississippi River and Tributaries (MR&T) project. This is a very unique project that was conceived and developed with consideration for the functional relation between all its parts and the whole. It is a project that covers all aspects of development in the Mississippi River valley below the vicinity of Cape Girardeau, Missouri, from flood control to navigation to environmental protection and enhancement. The MR&T project was well-planned, well-organized, well-engineered, well-constructed and, until recently, well-maintained. Unfortunately it is not yet completed, and adequate funding from the Congress is imperative if it is to be completed and properly maintained. If, because of inadequate funding and uncalled for delays due to countless and repetitive studies and misguided lawsuits by the misnamed and misled environmentalists, the lower reaches of the Mississippi River are not usable by commercial boats and barges and sea-going ships, then no amount of improvement on the upper reaches of the Mississippi River can have any favorable effect. "Without flood control nothing else matters."

One of the major opportunities that we have to increase the wealth of our Nation is to continue the improvement and development of our major river systems. As noted, the major system is the Mississippi River Watershed. For that reason we are here today to request that the Congress do what it has done since 1928. That is,

to appropriate sufficient supplemental funds, allowing COE to continue what the Congress has directed them to do. We are not talking about "earmarks" or pork barrel politics. We are talking about funds to keep our navigation channels open and to provide necessary dredging in order that our smaller but no less critical ports may continue to function; funds to continue the ongoing work to bring miles of levee sections that are deficient in either grade or section up to the design required to protect our citizens against the "greatest possible flood"; and funds to bring our bank stabilization program to completion in the most efficient manner, both economically and environmentally.

The Executive Committee of the Mississippi Valley Flood Control Association has carefully studied the President's budget request for fiscal year 2012. We have arrived at the unanimous conclusion that the required appropriation for the MR&T project is $335 million, just to be reasonably assured that the goals of navigation, flood control, levee improvement and bank stabilization are met; nothing more, nothing less.

In a special message to the Congress on flood control in the Mississippi Basin, dated July 16, 1947, President Harry S Truman began with the following in his opening sentence, "the major opportunity of our generation to increase the wealth of the Nation lies in the development of our great river systems." Later on in his message President Truman used these words, "we must never forget that the conservation of our natural resources and their wise use are essential to our very existence as a Nation. The choice is ours. We can sit idly by—or almost as bad, resort to the false economy of feeble and inadequate measures—while these precious assets waste away. On the other hand, we can, if we act in time, put into effect a realistic and practical plan which will preserve these basic essentials of our national economy and make this a better and a richer land." President Truman was speaking about the MR&T project in this last quote. And these words are still true today. On July 31, 1947, President Truman approved appropriations bills, including supplemental provisions for flood control on the MR&T project in fiscal year 1948 of $250 million. And that was in 1948 dollars.

We have attached a detailed breakdown of the requested funds of $355 million for the MR&T project for fiscal year 2012.

MISSISSIPPI VALLEY FLOOD CONTROL ASSOCIATION FISCAL YEAR 2012 CIVIL WORKS REQUESTED BUDGET MISSISSIPPI RIVER AND TRIBUTARIES APPROPRIATONS

[In millions of dollars]

Project/study	Fiscal year 2012 request: $335 million
MR&T INVESTIGATIONS	
Collection and study of basic data	500
Memphis Metro Storm Water Management, TN [FEAS]	100
TOTAL INVESTIGATIONS	600
MR&T CONSTRUCTION	
Atchafalaya Basin, LA	6,300
Atchafalaya Basin Floodway System, LA	1,900
Channel Improvement, AR, IL, KY, LA, MS, MO, AND TN	111,570
Mississippi River Levees, AR, IL, KY, LA, MS, MO, AND TN	58,980
Yazoo Basin, Upper Yazoo Projects	5,000
TOTAL CONSTRUCTION	183,750
MR&T MAINTENANCE	
Atchafalaya Basin, LA	1,468
Atchafalaya Basin Floodway System, LA	42
Baton Rouge Harbor, Devils Swamp, LA	48
Bayou Cocodrie & Tributaries, LA	2,145
Bonnet Carre, LA	61,230
Channel improvement, AR, IL, KY, LA, MS, MO, AND TN—TOTAL	32,032
Channel Improvement—Dredging	21,141
Channel Improvement—Revetments and Dikes	48,398
Greenville Harbor, MS	18

MISSISSIPPI VALLEY FLOOD CONTROL ASSOCIATION FISCAL YEAR 2012 CIVIL WORKS REQUESTED BUDGET MISSISSIPPI RIVER AND TRIBUTARIES APPROPRIATONS—Continued

[In millions of dollars]

Project/study	Fiscal year 2012 request: $335 million
Helena Harbor, AR	122
Inspection of completed works	1,350
Lower Arkansas River, North Bank, AR	223
Lower Arkansas River, South Bank, AR	150
Lower Red River—South Bank Levees	377
Mapping	1,202
Memphis Harbor McKellar Lake, TN	1,394
Mississippi Delta Region—Caernarvon, LA	438
Mississippi River Levees, AR, IL, KY, LA, MS, MO, AND TN	7,951
Old River control structure, LA	6,954
Red-Ouachita Basin Levees, AR and LA	.....
St. Francis River and Tributaries, AR AND OR	4,174
Tensas Basin, Boeuf and Tensas Rivers, AR AND LA	1,884
Tensas Basin, Red River Backwater, LA	2,473
Vicksburg Harbor, MS	32
Wappapello Lake, MO	4,167
White River Backwater, AR	896
Yazoo Basin, Arkabutla Lake, MS	4,606
Yazoo Basin, Big Sunflower (Bogue Phalia), MS	185
Yazoo Basin, Enid Lake, MS	4,386
Yazoo Basin, Greenwood, MS	807
Yazoo Basin, Grenada Lake, MOS	4,511
Yazoo Basin, Main Stem, MO	1,019
Yazoo Basin, Sardis Lake, MS	5,687
Yazoo Basin, Tributaries, MS	967
Yazoo Basin, Will M. Whittington Auxiliary Channel, MS	378
Yazoo Basin, Yazoo Backwater, MS	517
Yazoo Basin, Yazoo City, MS	731
TOTAL, MAINTENANCE	150,650
TOTAL, MR&T	335,000

Prepared Statement of the Missouri River Association of States and Tribes

We are requesting your support for three items in the fiscal year 2012 budget for the U.S. Army Corps of Engineers (COE), related to the Missouri River Basin. These include:

—$5 million to continue funding for the Missouri River Authorized Purposes Study;

—$72.888 million to continue implementation of the Missouri River Recovery Program; and

—$7 million to increase the operations and maintenance budget for the Northwestern Division, Omaha District, for protection of cultural and historical sites impacted by the operation of the Missouri River Mainstem Reservoir System.

The Missouri River Association of States and Tribes (MoRAST) is an association of representatives of the Governors of the States of Wyoming, Montana, North Dakota, South Dakota, Nebraska, Iowa, and Kansas and many of the American Indian tribes in the Missouri River Basin. MoRAST is interested in the proper management and protection of natural resources, including water resources, fish and wildlife, and other related issues of interest to the States and tribes in the basin, including cultural resources. The programs and operations of COE are very important to our members, especially due to the legal responsibilities of the States and tribes related to water and the fish and wildlife resources in the basin, as well as the trust responsibilities of COE to the tribes. The following paragraphs provide detailed information regarding the bases for our support of the three items referred to above for fiscal year 2012 budget of COE, as outlined below:

Funding for the Missouri River Authorized Purposes Study (MRAPS).—MoRAST strongly supports the appropriation of $5 million to continue funding for MRAPS in fiscal year 2012.[1] The Congress appropriated $4.483 million in fiscal year 2010. MRAPS was authorized to study the Missouri River Projects under the 1944 Flood Control Act (FCA) to determine whether changes to the purposes and existing Federal infrastructure may be warranted. The study was authorized for a total cost of $25 million at Federal expense. This study does not duplicate any previous study.

The Missouri River Basin Project (Pick-Sloan Program) envisioned a comprehensive system of projects and facilities in the Missouri River basin constructed by both the Bureau of Reclamation (BOR) and COE. The plan was only partially completed and there continue to be water needs and related issues in the basin, many of which are different than they were in 1944. This study is important for many reasons. It has been more than 66 years since the 1944 FCA was enacted and many changes have occurred. The Missouri River Mainstem Reservoir System continues to be operated in accordance with the 1944 FCA for various authorized purposes including flood control, water supply, water quality, irrigation, hydropower, navigation, recreation, and fish and wildlife. However, while the construction of the reservoir system and other works have resulted in large project benefits from some of the authorized purposes and much less for others, it has also created substantial negative impacts on the economies and resources of Indian tribes and others, as well as large environmental losses, such as wetlands and habitat for a number of native species, including three that are threatened or endangered.

In summary, there have been many changes in the physical, economic and environmental conditions that affect the Missouri River and Tributaries (MR&T) projects and the basin since 1944. COE needs $5 million for the study in fiscal year 2012. However, COE has made significant progress with the implementation of the study with the assistance of BOR and other Federal agencies, as well as extensive input from States, tribes, stakeholders, and the general public. COE held more than 40 public meetings and tribal focus events throughout the Basin and other areas to engage the public and collect information. It has recently released a draft scoping summary report and is currently holding feedback meetings to receive comments on the draft report until April 30. Additional work is needed to complete this process and the additional data collection, analysis, and public engagement needed to complete the study. Funds should be provided so the study can objectively determine whether changes are needed to the 1944 FCA in order to best meet the contemporary needs of the Missouri River Basin. Once the study is complete, the Congress can decide whether or not the law should be amended, additional project purposes added, and/or other changes made.

Funding for Missouri River Recovery Program.—We strongly support the $72.888 million recommended in the President's budget. It is the minimum necessary for current year compliance with the Biological Opinion (BiOP). The Missouri River Recovery Program (MRRP) was established by COE as a collaborative program to protect, recover and restore the Missouri River ecosystem and its native species, including the endangered pallid sturgeon, least tern, and piping plover. This program is authorized by sections 3109, 3176, and 5018 of the Water Resources Development Act (WRDA) 2007. Support for this program is critical to ensure at least enough funding is available for compliance with the BiOP, as amended in 2003. Compliance with the BiOP also protects economic uses as failure to comply with the BiOP could require changes to reservoir operations and negatively impact other purposes.

COE, various tribal, State, and Federal Cooperating Agencies and the Missouri River Recovery Implementation Committee (MRRIC), that includes these entities and various stakeholders, are in the process of developing a collaborative study and plan known as the Missouri River Ecosystem Restoration Plan (MRERP) to identify and guide long-term actions required to restore ecosystem functions, mitigate habitat losses, and recover native fish and wildlife on the Missouri River, while seeking to balance social, economic, and cultural values for future generations.

In addition to recovery and mitigation projects on the Missouri River Mainstem, a project to provide for fish passage through a diversion dam on the Yellowstone River near Intake, Montana, is especially important to the recovery of the endangered Pallid Sturgeon, as it will open up a large segment of free-flowing river for the pallid to spawn in. Work on this important tributary

[1] The State of Iowa does not support the continued funding of the MRAPS study.

project is underway and is being implemented through a cooperative effort of BOR, COE, U.S. Fish and Wildlife Service (FWS), and the State of Montana.

On a related matter, we also support removal of the prohibition on Federal reimbursement of travel expenses for non-Federal members of the MRRIC to attend its meetings. No new funds are required for this action as it can be funded through the MRRP, but this action is needed to improve the functionality and chances for success of the MRRIC. The basin covers one-sixth of the continental United States and travel to meetings in various parts of the basin is expensive.

Section 5018 of WRDA 2007 authorized the creation of MRRIC, but prohibited Federal reimbursement of travel expenses for non-Federal members of the committee. The same section of WRDA 2007 also authorized the development of a MRERP, which is a part of the MRRP. The failure to reimburse travel expenses hinders participation, prevents balanced representation by tribal, State, and nongovernmental members on the committee and is a hardship for some MRRIC members. Lack of travel reimbursement also makes participation by States and tribes difficult as cooperating agencies for the MRERP study, especially during these trying economic times and budget shortfalls for States, tribes, and others.

This issue could be resolved by either the inclusion of a provision in the fiscal year 2012 budget bill to allow travel reimbursement for attendance at MRRIC meetings or by amending section 5018 of WRDA 2007 in a new WRDA bill to remove the prohibition on Federal travel reimbursement. In any event, this issue needs to be resolved soon so that all members can participate, receive the background information, interact with other participants, and provide meaningful recommendations to COE and other agencies regarding MRRP as may be appropriate through the MRRIC process.

COE has a unique trust responsibility to the 28 Missouri River Basin tribes and their participation in both MRRIC and MRERP activities is vital to the success of efforts to restore the ecosystem of the Missouri River consistent with the social, cultural and economic needs in the Basin. The failure to fund travel for the tribes to attend these meetings will not save money and may result in delay or the need for more extensive government-to-Government consultations if the tribes are not able to participate adequately during the course of efforts by MRRIC to make recommendations to COE regarding recovery programs and the development MRERP.

In summary, funding MRRP at a minimum of $72.888 million for fiscal year 2012 is essential to ensure compliance with the amended BiOP on the Missouri River and to implement the project on the Yellowstone River near Intake, Montana, both of which are of critical importance to the recovery of endangered species and the restoration of the ecosystem. We also support removal of the prohibition on Federal reimbursement of travel for members of MRRIC to meetings of the committee to allow for full participation of tribal, State and stakeholder members to the committee.

Funding To Protect Tribal Cultural Resources.—It is requested that the Congress appropriate an additional $7 million for fiscal year 2012 for the Omaha District, Northwestern Division, COE for the stabilization of cultural and historic sites that continue to be negatively impacted by the operation of the Missouri River Mainstem Reservoir System. Funding for the protection of cultural and historic sites within the Omaha District has remained at $3 million for the past several years. Past funding through COE operation and maintenance budget has been woefully inadequate to address the ongoing damage to sites from operation of the Missouri River Mainstem Reservoir System.

COE has identified more than 400 historic and cultural sites protected by Federal law that will be potentially damaged by the current Annual Operating Plan, and the tribal nations in the Missouri River Basin have identified many more sites that could be impacted. However, there have only been funds to mitigate damage to a few sites each year. COE has a unique trust responsibility to the 28 Missouri River Basin Tribes arising from the government-to-Government relationship between the tribes and the U.S. Government, as well as an obligation under section 106 of the National Historic Preservation Act, applicable Executive orders, and other Federal laws, which require COE to either halt any Federal undertaking that will damage or destroy sites protected, or to mitigate the potential damage.

SUMMARY

We believe each of these programs is essential to the success of efforts to properly manage and protect the natural resources of the Missouri River Basin,

satisfy COE trust responsibilities to the Indian Nations in the basin and operate its projects in accordance with applicable Federal law. We would appreciate your help in providing adequate funding for these important programs and projects. Please let David Pope, MoRAST executive director, or Chairman Sando know if you have questions.

PREPARED STATEMENT OF THE MOSS LANDING HARBOR DISTRICT, CALIFORNIA

Mr. Chairman and members of the subcommittee: Thank you for the opportunity for me, Linda McIntyre, as harbormaster and general manager of the Moss Landing Harbor District in California to submit prepared remarks to you for the record in support of the fiscal year 2012 Energy and Water Development Subcommittee regular appropriations measure. I appear on behalf of the board of harbor commissioners, the fishermen, oceanographers and scientists, and the citizens and marine dependent businesses of the Monterey community which we represent.

We respectively request an additional $3.2 million for the U.S. Army Corps of Engineers (COE) operations and maintenance general account for scheduled authorized Federal channel maintenance as unanimously recommended by the California Marine Affairs and Navigation Conference.

The board of harbor commissioners recognizes and expresses its gratitude to the Honorable Dianne Feinstein, a member of this subcommittee, and the Honorable Barbara Boxer, chairman of the Committee on Public Works and Transportation, and the other members of this subcommittee and staff, for their past efforts in funding operations and maintenance of the Moss Landing Harbor Navigation Project for more than 60 years. This authorized project is of significant national economic benefit and critical economic importance to the commercial fishing industry, university and private oceanographic research fleet, and Monterey County in the central coast region of the State of California.

We are equally grateful to the chairman and the other members of this subcommittee and staff, for their continuing efforts in funding critically needed operations and maintenance funding of all our Nation's ports both large and small without discrimination.

Moss Landing Harbor is perhaps best known as the gateway to the unique Monterey Bay with its Submarine Canyon and National Marine Sanctuary and the homeport for its oceanographic research tenants, including California State University Marine Consortium, Stanford University Hopkins Marine Institute (well-known to John Steinbeck fans of Cannery Row) and the Monterey Bay Aquarium Research Institute (MBARI) an affiliate of the Monterey Bay Aquarium—America's most visited cultural and educational site.

Without continued maintenance dredging of the Federal channel at roughly 3-year intervals, none of these scientific, educational, environmental research, and vital commercial fishing activities could continue uninterrupted. The year 2012 represents the next required scheduled triennial dredging event. For this purpose we are requesting the addition of $3.2 million to the President's budget. We are advised COE's San Francisco District has the capability to execute this maintenance dredging cycle.

For those who are unfamiliar with the geography of Monterey Bay and surrounding region, we invite you to come visit. Moss Landing is strategically situated approximately mid-point between Santa Cruz and Monterey Harbors on Monterey Bay. It shares a common entrance with Elkhorn Slough, a critical estuary of national significance.

Construction of the project for navigation, Moss Landing, Monterey Bay, California was authorized in the Rivers and Harbors Act of March 2, 1945, at an authorized depth of 15 feet. The congressional findings reflected the national security and postwar economic development interest in maintaining and increasing commercial fish production. In the lexicon of national economic development. The same is true today.

In order to help harmonize the authorization and appropriations processes in the future and introduce an element of long-term planning and budgeting stability at COE's district level, we are seeking completion of a long-term dredged material management plan that would benefit both us and the Federal Government, and save everyone, especially the beleaguered U.S. taxpayer, money.

That plan would also continue our use of several grandfathered dredged material disposal sites as the same land and seaward geographic factors that make us an indispensable element of the Monterey Bay ecosystem also limit our options for disposal with few if any landside alternatives.

In the final analysis we are just a small harbor with a big problem not of our creation in search of a comprehensive solution. The first step is funding the long overdue maintenance. We cannot wait another year.

We look forward to appearing before this subcommittee on future occasions to provide progress reports concerning our uphill and upstream efforts to both preserve navigation and improve the environment in Moss Landing Harbor, California.

I am prepared to supplement my prepared remarks for the record in response to any questions that the chair, subcommittee members, or staff may wish to have me answer.

Thank you Mr. Chairman and members of the subcommittee.

PREPARED STATEMENT OF THE OHIO LAKE MANAGEMENT SOCIETY

To the honorable members of the Senate Subcommittee on Energy and Water Development: I am writing in support of continued and expanded appropriations for the United States Army Corps of Engineers (COE) Aquatic Plant Control and Research Program (APCRP). I write on behalf of the membership of the Ohio Lake Management Society, a citizen based nonprofit organization, founded in 1986, with mission to promote research and comprehensive management of lakes and reservoirs in Ohio.

For the past three decades the Ohio Environmental Protection Agency has repeatedly reported to the Congress, in their Clean Water Act section 305(b) and section 314 documents, that the condition of Ohio's public lakes is being negatively impacted by nuisance growths of aquatic weeds, many of which are exotic species not native to the State. In 1996, the last year such data are available, the Ohio EPA reported in their Ohio Water Resource Inventory that recreation opportunities in 32 percent of 222 accessed public lakes in Ohio were threatened by nuisance growths of aquatic weeds. These data indicate that there exists a significant and widespread problem with aquatic weeds currently not addressed by Clean Water Act regulations passed by the Congress in 1972.

Public lakes in Ohio are used by millions of citizens each year for recreation, thus the impact of excessive growths of aquatic weeds on recreational opportunities is significant. The Ohio Department of Natural Resources, in their 2008 Statewide Comprehensive Outdoor Recreation Plan, reported that 33 percent of households representing more than 11 million Ohio citizens enjoy recreational boating, an activity that demands proper control and management of aquatic weeds.

The extensive problems with aquatic weeds that are being faced in Ohio are expected to be present in lakes nationwide, thus impacting recreation for millions of Americans who enjoy boating, fishing, and swimming. Given this situation, it is inappropriate that the Congress would eliminate funding for COE's Aquatic Weed Research program, which provides useful scientific information that affects so many citizens of the Nation, for so few per capita dollars spent.

It is imperative that the United States Senate continue to fund the APCRP program so that scientific research from multiple perspectives (chemical, biological, mechanical, etc.) is conducted to determine the most cost effective ways to control the multitude of aquatic weed species, many exotic species, that now overpopulate the Nation's recreational lakes. The information gained from COE research is important to those that manage lake water quality to help them select the best aquatic weed control option for their specific lake situation. The data from the APCRP program are not only of value to State and local government agencies that manage public lakes, but also to the nationwide network of consulting firms that provide lake management services to citizens that own private lakes, many of which have problems with too many aquatic weeds.

In conclusion, on behalf of the millions of citizens in Ohio that enjoy recreational activities on lakes and reservoirs, I urge you to support continued and expanded funding for the APCRP program to conduct research on the control of aquatic weeds at a minimum level of $4 million per year. This action by the United States Senate will help ensure that COE will continue to provide vital scientific data to those that manage and control nuisance growths of plants in our Nation's waterways.

PREPARED STATEMENT OF THE STOCKTON PORT DISTRICT, CALIFORNIA

We wish to thank you for this opportunity to provide congressional testimony by the Port of Stockton, California on behalf of its appropriations requests. The Stockton Port District is a California public agency created by the California State Legislature. The port is approaching its 80th year of operations.

The port is located in the city of Stockton, California, which has an unemployment rate more than 21 percent, and nearly 18 percent for San Joaquin County (SOURCE.—February 2011 data, California Employment Department). The port is the economic portal for the San Joaquin Valley and beyond. It is considered by many to be the economic engine that generates jobs and income for the Central Valley and the region.

The port suffered significantly during the economic downturn but it is recovering rapidly with strong growth and jobs creation. We have more than 1,200 acres available for development, which is almost unique among California ports. In calendar year 2010, the Port achieved a throughput of 3.83 million tons. With the introduction of iron ore exports in January 2011, we expect total throughput to double in the very near future and expect export tonnages to surpass import tonnages within 2 years. We are expanding our rail capacity right now and during the next fiscal year, starting on July 1, 2011, we will spend another $1 million as well with a goal of being able to increase the throughput capacity of iron ore and coal unit trains from two per week to seven per week. This would equate to more than 3 million tons per year and provide for an export gateway to Asia that is only available at few ports situated on the west coast. For our bulk commodities, the availability of a year-round authorized channel depth of 35 feet or deeper is a very critical factor. Currently our iron ore ships have to top off downstream in deeper channels before export to Asia. It is inefficient. Nevertheless, we are rapidly fulfilling the President's National Export Initiative.

The port and its waterway are of national significance as a "Marine Highway" (M–580), a recent designation by the Department of Transportation (DOT). This is 1 of 18 marine highway corridors nationally. Additionally we are officially designated a "strategic corridor of the future" by DOT. The port is also designated as a reserve facility by the Department of Defense in time of need.

Logistically, the port has direct access to two transcontinental rail lines. Direct rail-to-ship facilities exist at the port which is nearly unique for California ports. We are within 1 mile of Interstate 5, which serves the entire west coast, north to south.

We are highlighting and updating the three priority projects in our appropriations requests for your consideration.

—The San Joaquin—Stockton Project is under the operations and maintenance budget of the U.S. Army Corps of Engineers (COE). It is our most urgent and highest-priority request. For the past several years, COE has not been able to maintain the John F. Baldwin and Stockton Ship Channels to the federally authorized depth of 35 feet on a year-round basis. We have been restricted to 31–33 foot channel depths for many months and have been unable to do any dredging. This consistent problem stems from insufficient funding, unpredictable shoaling locations, and a very short dredging window. Unfortunately, our only dredging window closes just before the winter when storm flows create shoaling at unpredictable locations in the channels. This has impaired the efficient movement of commerce and sustained employment for the port, its tenants, and the region.

We have requested the COE for maintenance dredging to 37 feet plus 1-foot overdraft to insure a year-round controlling depth of 35 feet. We believe COE supports our case through its expressed budget capabilities to the Congress. The port is requesting $12.5 million for fiscal year 2012. The President's fiscal year 2012 budget contains only $3.7 million for this project, which is not enough to assure a year-round authorized depth. Bulk commodities vessels are very sensitive to any loss of authorized depth; shippers would incur several hundred thousand dollars of losses per vessel for each foot of channel depth blocked by shoaling.

—The San Francisco Bay to Stockton Channel Deepening Project is in the Construction General Budget of COE. This project would deepen the John F. Baldwin Channel to 45 feet and the Stockton Ship Channel to 40 feet. Our fiscal year 2012 request is for $2.5 million to keep pace with a State of California construction award of $17.5 million toward the non-Federal share of the project. This State construction grant expires in calendar year 2013 if construction is not started. No funds are shown in the President's budget for fiscal year 2012. This deepen marine highway project would significantly increase goods movement efficiencies, especially iron ore and other bulk exports, increase employment in an area where unemployment rates are more than twice the national rate, and keep thousands of trucks off of congested roadways, especially I–880, I–80, I–580, and I–205. One ship utilizing the ship channel can take approximately 1,300 trucks off of congested highways between the Central Valley and the San Francisco Bay Area. The economic and environmental benefits, especially in air quality, are very robust.

A preliminary economic analysis by COE show a conservative National Economic Development (NED) average annual benefits of $73.5 million for this project. Not all the commodity movements, especially calendar year 2011 iron ore exports, are included in this preliminary analysis. A very robust and positive benefit—cost ratio is expected once the NED costs are prepared. The Stockton Ship Channel is the primary access route for waterborne shipping from and into the Central Valley and beyond.

—The Rough and Ready Island Storm Water Project would be in the Construction General Budget of COE. This project would replace an obsolete storm water system and include drainage detention and lift facility on Rough and Ready Island. The project would also reduce environmental problems, increase flood protection, and create more usable land for development on the island. Rough and Ready Island is one of the State's last remaining large parcels of industrial property available for immediate development. The amount of $3 million is requested and is authorized pursuant to the Water Resources Development Act of 2007, Public Law 110–114. The project can be constructed within a short time period and benefit employment in the immediate area experiencing a very high rate of unemployment.

We thank you for your consideration for the Port of Stockton requests.

PREPARED STATEMENT OF THE LITTLE RIVER DRAINAGE DISTRICT

Dear Senator Feinstein: My name is Dr. Sam M. Hunter, DVM of Sikeston, Missouri. I am a veterinarian, landowner, farmer, and resident of southeast Missouri.

I am the president of The Little River Drainage District, the largest such entity in the Nation. Our District serves as an outlet drainage and flood control District to parts of seven counties in southeast Missouri. We provide flood control protection to a sizable area of northeast Arkansas as well. Our District is solely tax supported by more than 3,500 private landowners in southeast Missouri.

My remarks will be directed toward the Mississippi River and Tributaries (MR&T) project and the St. Francis River Basin portion of the MR&T. Those funds when properly expended are investments yielding a return of substantial benefits to the American taxpayer throughout this Nation. They are used to prevent flooding to much of our valuable farmland, to industrial sites, and to upgrade our ever aging locks and dam system on our navigable streams which will prevent unscheduled lock closures, modernize our hydro-electric plants, and restore some of our environmental assets. MR&T authorized by the Congress in 1928 and still not completed is returning back to our Nation more than $25 for every $1 expended. This can be a job creating project for our Nation each year.

We are fully aware of the financial situation of our Nation and we must all learn to do more with less and strive to reduce out national debt, balance the budget, and create more jobs for our citizens. There are projects and programs which are funded 100 percent or cost shared by our national treasury which need to be eliminated or at least reduced in scope. However, the MR&T project is not one of them. I will point out for you the reasons why.

—This project has paid back to our Treasury more than $25 for every $1 invested for damages prevented and benefits derived.

—The project was authorized by the Congress almost 90 years ago. Our Nation made a commitment to our citizens to improve a very valuable resource of our Nation and then maintain it. We must keep that commitment.

—Investing and making funds available for the MR&T project will create jobs, and it will bring additional funds into our treasury.

—It is the most environmental friendly form of transportation in our Nation.

—It is the most fuel-efficient means of moving commodities. For instance consider 1 gallon of fuel moves 155 tons of freight by truck; 413 tons by rail; and 576 tons by water.

—It serves more than 75 percent of the population of this Nation and touches 36 States.

—It provides a means for our commodity producers and manufacturers to compete fairly in a global market.

—It provides protection from flooding to the many people who live along the Mississippi River and its tributaries.

—It provides much needed energy from hydropower and provides many of our cities with drinking water.

—It is used extensively each year for recreational purposes such as boating, camping, fishing, sightseeing, and the like.

The above is a short list of the benefits of the MR&T project which is a line item in the budget. This administration and administrations for the past 30 years each year submit budgetary amounts which are not sufficient to adequately maintain the channel as well as the locks and dams of which some are more than 75 years old. We must invest and we must improve this vital part of our infrastructure. One lock failure upstream can have a devastating effect downstream for each and every port and other users of this system.

We currently spend less than $6 billion annually for maintenance and construction on our major waterways system whereas China and Brazil are spending $15 and $30 billion annually to modernize and expand theirs respectively. We must close that discrepancy so we can compete on the open markets.

There is $210 million in the President's budget for fiscal year 2012 for this project. This is totally unacceptable. This amount might pay the salaries of current employees without layoffs. We ask you to support funding of $335 million for fiscal year 2012 which will provide some funds for maintenance and a small amount for new construction. The Corps of Engineers (COE) capability is $550 million. The overall COE budget is less than $5 billion yet it is estimated we need $110–$200 billion over the next 20 years just to modernize and keep our waterway system functional.

Further, I would be remiss to not mention the hardships and lengthy delays due to the restrictive nature of policies and regulations being implemented by the Environmental Protection Agency (EPA) and other such agencies. EPA needs to be reduced in authority and the powers they have been asserting the past few years. Some of the policies and restrictions they are implementing are detrimental to the progress our Nation needs to be making. The delays, lengthy reviews, and unnecessary requirements are costly and causes many worthwhile projects from being completed.

Also we ask you to review the mission and purposes of Federal Emergency Management Agency. The nationwide re-mapping of flood plains and zones is costly and having an adverse impact on those who live within our delta areas and who are protected by a well maintained levee system. Recent concessions made by Director Fugate will help but much more is needed.

I wish to thank you very much for your time and kind attention and for taking the time to review the above. We would be very appreciative of anything this subcommittee can do to help us improve our environment, improve our livelihood, and improve the area in which we live and work which ultimately is good for America. We are also very appreciative of all this subcommittee has done for us in the past. We trust you will hear our pleas once more and act accordingly.

PREPARED STATEMENT OF THE NATURE CONSERVANCY

Mr. Chairman and members of the subcommittee: Thank you for the opportunity to present The Nature Conservancy's testimony on the fiscal year 2012 appropriations for the U.S. Army Corps of Engineers (COE) and Bureau of Reclamation. The Nature Conservancy is a nonprofit organization dedicated to the conservation of biological diversity. Our on-the-ground conservation work is carried out in all 50 States and in 30 foreign countries and is supported by approximately 1 million individual members.

We recognize the challenges of working in a constrained fiscal environment and that the Congress is making appropriation decisions differently than in years past. We also recognize the continued importance of our water resources and the benefits those resources provide to people, our economy, our environment, and the quality of life in our communities. Our focus is on the programs and investments needed to ensure those benefits are enhanced today and made sustainable for tomorrow.

The Nature Conservancy supports the overall approach of building sustainability into the development and management of our Nation's water infrastructure, including the ecosystem restoration projects essential to ensuring that sustainability. These ecosystem restoration projects pay dividends through higher-quality water, natural flood control, sustaining commercial fisheries, and supporting economically important outdoor recreation; with impacts stretching out for decades to come, the projects and proposals that follow represent a very high return on investment.

SUSTAINABLE RIVERS PROJECT

Sustainable Rivers Project (SRP) is an initiative launched by COE in partnership with the Conservancy to update decades-old water management practices to meet society's needs today and in the coming decades. The SRP is developing and demonstrating innovative approaches to provide for, and improve, water supply and

flood risk management while restoring critical ecosystems. The President's budget includes two specific initiatives that support these efforts:

Global Change Sustainability.—This project will allow COE to advance a variety of new practices through several initiatives, including SRP, working with State and other Federal agencies to develop a national strategy to update drought contingency plans and other initiatives to ensure a sustainable water supply and adapt to projected changes in precipitation patterns and other out-year conditions impacting the Nation's water supplies. The Conservancy supports the $10 million in the President's budget for this program.

National Portfolio Assessment for Reallocations.—Launched in fiscal year 2008, this assessment is a national effort to learn from past water management techniques and then apply the lessons learned more broadly. Part of this effort will develop new methods and tools that can be transferred to COE projects nationwide. The Conservancy supports the $571,000 included for this program.

CORPS CONSTRUCTION PRIORITIES

Hamilton City Flood Damage Reduction and Ecosystem Restoration.—We were pleased to see Hamilton City selected as 1 of 2 new construction starts in COE's fiscal year 2012 proposed budget. This project, developed with substantial assistance by the Conservancy, will increase flood protection for Hamilton City, California, while restoring approximately 1,500 acres of riparian habitat. Appropriations for the first phase will initiate construction of approximately 2 miles of levee, removal of one-half of the existing levee, and roughly one-third of the habitat restoration. The Conservancy strongly supports the $8 million proposed in fiscal year 2012 to complete the first phase of construction.

South Florida Ecosystem Restoration Program.—COE flood control projects, coupled with agricultural and urban development, have degraded the Everglades, one of the most diverse and ecologically rich wetlands ecosystems in the world. Water Resources Development Act (WRDA) 2007 authorized construction of the first projects under the Comprehensive Everglades Restoration Plan,and we encourage funding the Indian River Lagoon South, Picayune Strand, and the Site 1 Impoundment projects. The Conservancy supports the $162,724,000 proposed for the South Florida Ecosystem Restoration Program in fiscal year 2012.

Upper Mississippi River Environmental Management Program.—Authorized in 1986, this program supports coordinated habitat rehabilitation and enhancement projects in the Upper Mississippi River system. Over the 25 years of the program, COE has completed more than 54 projects, benefiting more than 94,000 acres of aquatic and floodplain habitat. Currently, 22 projects in the program are in planning, design, or under construction. Completion of these projects will benefit an additional 70,000 acres of aquatic and floodplain habitat. The Conservancy supports the $18,150,000 proposed for the Environmental Management Program (EMP) in fiscal year 2012.

Missouri River Fish and Wildlife Recovery Program.—Under this program, COE has completed 30 projects in the lower Missouri basin States to assist in the recovery of three listed species, restoring more than 40,000 acres of habitat. New authority was provided in WRDA 2007 for the expenditure of funds in the upper basin States and for the Intake Dam project on the Yellowstone River in Montana. Construction of fish passage and screens at Intake Dam is a priority for the recovery of the endangered pallid sturgeon and other warm-water fish. The Conservancy supports the $72,888,000 proposed for the Missouri River Fish and Wildlife Recovery Program (MRRP) in fiscal year 2012, including funding to continue progress on the design and construction of fish passage and screens at Intake Dam.

Chesapeake Bay Oyster Recovery.—Eastern oyster populations in the Chesapeake Bay have been decimated from historical levels by a century of overfishing, disease, and pollution. This project will help move the oyster population toward sustainable levels. The $5 million proposed for the fiscal year 2012 budget will create more than 60 acres of additional oyster habitat.

Great Lakes Aquatic Nuisance Species Dispersal Barrier.—Invasive fish, plants, and invertebrates have had severe economic impacts to human uses and to freshwater biodiversity of the Great Lakes. Preventing further invasions through the waterway system is the most cost-effective way to protect the plethora of Federal lands and infrastructures threatened. The Nature Conservancy supports the budget request of $13.5 million in the construction account; $10,565,000 from operations and maintenance; and no less than $3 million in the Investigations account to expedite the Great Lakes and Mississippi River Interbasin Study.

CONTINUING AUTHORITIES PROGRAM

We urge the subcommittee to continue its strong support of the section 1135: Project Modifications for Improvement of the Environment and section 206: Aquatic Ecosystem Restoration programs. Demand for these valuable programs continues to outstrip funding. The Conservancy supports adequate funding for these programs in the fiscal year 2012 budget.

Adequate funding will ensure support for two section 1135 projects, Spunky Bottoms (Illinois) and the Lower Cache River (Alaska). The Spunky Bottoms project is a model floodplain restoration and reconnection effort on the Illinois River that needs $750,000 to complete the Plans and Specifications phase and initiate construction. The Lower Cache River project seeks to restore natural meanders to the lower 7 miles of the river, improving bottomland hardwood forests, and expanding habitat for a variety of sportfish and mussels.

The Conservancy also supports the request for $4,001,000 to complete design and initiate construction for a section 206 project for Emiquon East (Illinois), a floodplain restoration and reconnection project.

U.S. ARMY CORPS OF ENGINEERS INVESTIGATION PRIORITIES

Illinois River Basin Restoration Program.—This Federal-State partnership sustains the health of the entire Illinois River Basin through projects that restore habitats, species, and the natural processes that sustain them. It complements other Federal programs such as the Illinois Conservation Reserve Enhancement Program and Environmental Management Program of the Upper Mississippi, yet is unique in its basin-wide approach to restoration. The Conservancy supports the $400,000 funding proposed for this program in fiscal year 2012.

Puget Sound Nearshore Marine Habitat Restoration.—This study, when completed, will identify restoration and protection needs and opportunities in the nearshore regions of Puget Sound. The Sound supports the second-largest U.S. port (combined Ports of Seattle and Tacoma) for container traffic that has accounted for more than $70 billion in foreign trade; it is an economic priority to ensure that Puget Sound maintains the ecological resiliency to sustain vital services for both people and nature. The Conservancy supports the proposed $400,000 in fiscal year 2012 to carry out this investigation.

Willamette River Floodplain Restoration Study.—COE and the Conservancy are working together to identify ecological flow requirements downstream of Corps dams on the Willamette River and incorporate those flows into dam operations to improve fish and wildlife habitat and community flood protection. Additionally, this study will assess the potential for floodplain restoration in the Middle Fork and Coast Fork tributaries of the Willamette River to reduce flood damage while restoring natural wetlands and promoting ecosystem restoration. The Conservancy supports the $213,000 proposed in fiscal year 2012 to continue this study.

Yellowstone River Corridor Comprehensive Study.—Funding these ongoing economic, fisheries, and wetlands studies will help ensure that the longest free-flowing river in the lower 48 States maintains its natural functions while supporting irrigation and other uses of its waters. The study will help determine the significance of the cumulative effects of water use on aquatic species and riparian hardwood forests, while guiding the establishment of beneficial management practices. The Conservancy supports the proposed $200,000 for fiscal year 2012.

BUREAU OF RECLAMATION

Upper Colorado River Endangered Fish Recovery and San Juan River Basin Recovery Programs.—These programs take a balanced approach to restore four endangered fish species—the pikeminnow, humpback chub, razorback sucker, and bonytail—that adhere to existing and State-specific water law while facilitating each State's development of their Colorado River Compact allocation. These programs implement a range of basin-wide strategies, including improved management of Federal dams, river and floodplain habitat improvement, stocking of endangered fish, and management of non-native fish species. The Conservancy supports the proposed $6.2 million in fiscal year 2012 for the two programs.

Platte River Recovery Implementation Program.—The program helps restore the four endangered or threatened species in the basin—whooping crane, interior least tern, piping plover, and pallid sturgeon—while enabling existing water projects in the basin to continue operations. Specifically, the program is working to increase stream flows in the central Platte River at ecologically and economically important times; enhance, restore ,and protect lands for target bird species; and offset post-

1997 depletions. The Conservancy supports the proposed $11,037,000 for this recovery effort in fiscal year 2012.

Basin Studies and WaterSMART.—We support the request for the basin study programs and WaterSMART grant programs. These programs support sustainable water use and management by focusing on water conservation, reuse and recycling, and on environmental protection and restoration. We also support the proposed funding for the Bureau's environmental restoration work, including the programs in the California Bay Delta and Colorado River.

POTENTIAL ADDITIONAL FUNDS

We recognize that previous year's appropriations for COE, including 2010 and 2008 appropriations, have been higher than the President's fiscal year 2012 request. Should the subcommittee decide to appropriate more than the amount requested by the President, we would work with COE and partners to promote use of additional funds for other priority projects, including:

Upper Mississippi and Illinois Navigation and Ecosystem Sustainability Program.—This project would begin construction on 11 ecosystem restoration and 5 navigation projects while continuing planning and design work for lock expansion on the Illinois and Mississippi Rivers.

Cartersville Diversion Dam Fish Passage.—This project would construct a fish passage at Cartersville Dam, allowing fish, including the federally listed endangered pallid sturgeon, to reach the upstream portions of the Yellowstone River.

Connecticut River Watershed Study.—This project will restore 410 miles of river flow and thousands of acres of natural habitat in the Connecticut River Basin. The study identifies dam management modifications for environmental benefits while maintaining beneficial human uses.

White River Basin-Wide Comprehensive Study.—This project will evaluate the impact of Federal impoundments, navigation, and water withdrawals for agriculture, power generation, modifications and a variety of other uses on the White River basin and help determine ecological and human needs.

Big Cypress Basin Watershed Study.—This project will restore the natural river flow of Big Cypress Bayou to enhance the health of Caddo Lake and the downstream wetlands, wetlands recognized as globally significant by the Ramsar Convention.

Long Island Sound Oyster Restoration.—This project will develop a comprehensive plan for restoring oysters and other shellfish in Long Island Sound to support the ecological and economic well-being provided by a sustainable oyster fishery.

Lower Mississippi River Resource Assessment.—Flood control and drainage systems have accelerated erosion and habitat loss along the Lower Mississippi River and its tributaries. Working with the Department of Interior, the Corps will evaluate river management, habitat, and public access to recommend actions for addressing current and future needs.

West Pearl River Navigation Study.—The aquatic communities of the Pearl, West Pearl, and Bogue Chitto Rivers are severely disrupted by old and disused navigation structures. This study will examine the feasibility of removing them or repurposing the structures to improve environmental and recreational conditions.

Thames River Basin Watershed Study.—This study for the Thames River Basin ecosystem, including its tributaries to Long Island Sound, will determine the research and management measures necessary to improve the management of water control structures in the basin.

Middle Potomac River Watershed Comprehensive Study.—This study will develop a comprehensive, multi-jurisdictional sustainable watershed management plan for the Middle Potomac River watershed, balancing the ecological functions and services provided by the river with the human demands upon it.

We appreciate the opportunity to present our comments on the Energy and Water Development appropriations bill.

PREPARED STATEMENT OF THE VENTURA HARBOR, VENTURA PORT DISTRICT—CALIFORNIA

The President's fiscal year 2012 budget request for Ventura Harbor reflects a request of $2,805,000 for operation and maintenance for annual dredging activities within and around the Federal channel area of Ventura Harbor. Unfortunately, funding at that level does not accomplish the task.

In fiscal year 2011, the Corps of Engineers (COE) was only able to complete the dredging of 300,000 cubic yards of material, leaving 500,000 cubic yards of material not dredged, and remaining in place to be addressed next year. It is anticipated that more than 1 million cubic yards will need to be dredged in fiscal year 2012. Informal communications with COE suggest that fiscal year 2012 funding of $4,500,000 is required to meet the Ventura Port District's dredging requirements for the next fiscal year.

The authorizing legislation for this request is Public Law 90–483, section 101. The appropriations history is:

Fiscal Year 2004.—$2.9 million (Public Law 108–137);

Fiscal Year 2005.—$2.9 million (Public Law 108–447);

Fiscal Year 2006.—$2.6 million (Public Law 109–103);

Fiscal Year 2007.—$2.6 million (Public Law 110–5);

Fiscal Year 2008.—$3.4 million (Public Law 110–161);

Fiscal Year 2008.—Emergency funding $5 million (Public Law 110–252) breakwater repairs;

Fiscal Year 2009.—$2.8 million (Public Law 111–8);

Fiscal Year 2010.—$6.1 million (Public Law 111–85) included additional funds to complete breakwater repairs; and

Fiscal Year 2011.—$2.8 million.

It is noted that employment associated with the commercial fishing industry in the Port of Ventura area is directly related to the dredging activities of COE. In 2010, it is estimated that 71 million pounds of seafood product were unloaded at facilities associated with the Port of Ventura, accounting for significant employment in the area.

DEPARTMENT OF ENERGY

PREPARED STATEMENT OF THE ALTIRA GROUP, LLC

Gentlemen: I am writing this letter in support of the Department of Energy Oil and Gas Research and Development Program and against the President's fiscal year 2012 budget request to zero out this program.

Oil and gas is an essential part of our energy needs now and for the foreseeable future. As a Nation we should be supportive of efforts to extract and utilize our natural resources as cheaply and cleanly as possible. These efforts require the research and development (R&D) to identify new technologies and methodologies that are being actively supported by the Research Partnership to Secure Energy for America (RPSEA) program.

The RPSEA program that administers these research dollars is supported with matched funding of 50 percent or more from industry and the technical support and liaison of thousands of scientists and engineers. It is an archetype for an efficient public private partnership and serves a unique place in fostering research at a pre-commercial stage in the development of technologies that are not supported by venture capital or industrial research programs.

The oil and gas industry is a technologically driven industry. However, oil and gas companies produce oil and gas as their end products, not technology, and they rely heavily on outside service companies. (This is particularly true for the U.S. Independents who develop most of our reserves.) Service companies, while good at deploying new technologies, are not adequately addressing our need for technological development. In addition, universities have not coped well with the boom bust industry patterns and are struggling to provide students adequate research opportunities. RPSEA has done a nice job of pulling these three constituencies together for relatively low cost and building a forward-looking R&D structure for the country.

Ultimately the R&D supported by RPSEA will lead to additional oil and gas development (and royalties to government), jobs to many of the providers of these technologies and ultimately greater energy security at a lower price.

Please note, I am a venture capitalist (former oil and gas geophysicist) and a former Board Member of RPSEA. Our firm focuses on energy technology. Altira's portfolio companies have not received money from this program.

PREPARED STATEMENT OF THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

To the chairman and members of the subcommittee: Thank you for this opportunity to provide testimony on the importance and need for strong Federal research and development (R&D) activity in the areas of oil and natural gas, coal, and geothermal technologies. These activities reside in the Department of Energy's (DOE) fossil energy program (oil, natural gas, coal, etc.) and energy efficiency and renewable energy program (geothermal). They are an essential investment in this Nation's energy security.

The American Association of Petroleum Geologists (AAPG) is the world's largest scientific and professional geological association. The purpose of AAPG is to advance the science of geology, foster scientific research, and promote technology. AAPG has nearly 34,000 members around the world, with roughly two-thirds living and working in the United States. These are the professional geoscientists in industry, government, and academia who practice, regulate, and teach the science and process of finding and producing energy resources from the Earth.

AAPG strives to increase public awareness of the crucial role that geosciences, and particularly petroleum geology plays in our Nation's economic and social fabric.

It is widely accepted that U.S. energy supplies will come from increasingly diverse sources over coming decades. New and alternative energy sources will supplement conventional energy sources to meet the Nation's growing energy needs at affordable prices. Diversity in energy supplies enhances U.S. energy security by reducing our reliance on any single energy source.

VerDate Nov 24 2008 17:29 Dec 28, 2012 Jkt 064597 PO 00494 Frm 00230 Fmt 6604 Sfmt 6621 U:\2012HEAR\10HEAR\NDP.TXT 64597

Scientific and technological advances are necessary to ensure that this energy diversification occurs without economically damaging disruptions. This is very much in the public interest and a compelling reason why Federal R&D investment is needed.

What is often misunderstood, however, is that this R&D investment cannot be solely focused on new and alternative energy sources. Ensuring the uninterrupted availability of conventional energy, which provides the bulk of the Nation's energy today, also requires new scientific insights and technological breakthroughs.

In fact, our Nation is not facing a choice between conventional and alternative energy sources—a choice between yesterday's energy and tomorrow's energy—although that is how the debate is often framed.

Oil, natural gas, and coal currently supply 83 percent of the Nation's energy. These resources are the foundation of our energy future. Upon this foundation we are now developing and deploying new and alternative energy sources.

Our Nation's R&D choices must recognize the need to keep this foundation strong while also developing new energy sources for the future. Both of these tasks require sustained R&D investment.

OIL AND NATURAL GAS TECHNOLOGIES PROGRAM

AAPG strongly urges continued funding of the DOE oil and natural gas technologies programs, which the President has proposed for termination.

Oil and natural gas supply 62 percent of our Nation's energy. Oil is the source of virtually all transportation fuels. Natural gas heats homes and businesses, generates electricity, is a chemical feedstock, and has potential for transportation systems. Supplying the oil and natural gas consumed today and in the future requires significant technological advancements.

Several commonly overlooked trends in the oil and natural gas sectors support a Federal role in oil and natural gas technologies R&D:

—The independent oil and gas producer is responsible for finding and producing most U.S. oil and natural gas resources. According to the Independent Petroleum Association of America (IPAA), a trade association, independent producers produce 68 percent of the Nation's oil, 85 percent of the Nation's natural gas, and drill 90 percent of the Nation's oil and natural gas wells. The median-sized independent producer is the epitome of American small business.

—Independents typically work on projects that are too small for vertically integrated "major" oil and gas companies to develop commercially. Technology is vitally important for locating these resources underground, but these producers do not have the capacity to conduct independent research.

—Increasingly domestic oil and natural gas production is coming from nontraditional (unconventional) resources, such as the Barnett Shale of Texas or the Bakken formation of the Willison Basin. These resources play a vital role in building our Nation's energy future, and their development requires significant R&D investment.

—Federal R&D has historically provided support for the Nation's universities and colleges, which have proven to be a rich source of technological innovation. But as Federal support for oil and natural gas technology development has waned, so has the ability to conduct this type of research and train the next generation of U.S. scientists and engineers. There is a serious workforce shortage both in industry and government, and is the subject of a new study by the National Research Council.

The goal of a robust Federal R&D program in oil and natural gas technologies is to enable and encourage the environmentally responsible development of the Nation's petroleum resources on behalf of the American people. This includes conventional oil and natural gas, nontraditional resources, and emerging resources, such as methane from methane hydrates, which according to a recent study by the National Research Council "could help to provide greater energy security for the United States and to help address future energy needs globally."

We request the Subcommittee on Energy and Water Development appropriate $100 million for oil and natural gas technology programs to be administered by DOE's Office of Fossil Energy to support research projects that target increased production of domestic oil and natural gas resources.

COAL PROGRAM

The Nation's coal resources are essential to U.S. energy security. AAPG supports research and development funding for coal, including clean-coal technologies such as carbon capture and sequestration. AAPG urges the Congress to reject the Presi-

dent's proposed cuts to this program and provide funding of $393 million, equal to fiscal year 2010 appropriations, for these activities.

Again, these investments must be balanced. In evaluating the DOE coal program, I urge you to review the findings of the National Academy's report entitled "Coal: Research and Development to Support National Energy Policy", released in June 2007. The study finds that while there are significant uncertainties in U.S. coal reserve and resource estimates, there is sufficient coal at current consumption to last for more than 100 years.

However, there is a real need for more "upstream" coal research to increase our understanding of the Nation's resource base. The study group observed that presently more than 90 percent of Federal R&D spending for coal is on the "downstream" side, focused on utilization, carbon capture and sequestration, and transport and transmission. Only 10 percent goes to resource and reserve assessment, mining and processing, environment/reclamation, and safety and health.

GEOTHERMAL ENERGY TECHNOLOGIES PROGRAM

Geothermal energy is an important alternative energy resource that provides baseload power to the Nation's electrical grid. Significant expansion of geothermal power production may be possible through the development of enhanced or engineered geothermal systems, as well as mining heat from low-temperature, co-produced, and fluids in permeable sedimentary resources.

AAPG supports the President's $101.5 million request for the DOE geothermal program.

SUMMARY

Our Nation has the resources and capacity for a bright energy future. Realizing this future requires prudent R&D investment to supply the conventional energy sources we will rely on in coming decades, and the breakthroughs in new and alternative energy sources that will power the future. Thank you for the opportunity to submit this testimony.

PREPARED STATEMENT OF THE AMERICAN GAS ASSOCIATION

EXECUTIVE SUMMARY

Natural gas is America's clean, secure, efficient, and abundant fossil fuel.

The Department of Energy (DOE) should include in its research, development, and demonstration (RD&D) portfolio energy efficiency of natural gas equipment in commercial, residential, and industrial markets.

DOE's Building Technologies Program should spend at least $12 million of its budget on natural gas RD&D.

DOE's Industrial Technologies Program should spend at least $30 million of its budget on combined-heat-and-power (CHP) RD&D (request is $25 million) with activities in small- (below 20 KW), medium- and large-scale systems.

DOE's Transportation Technologies Program should spend at least $30 million on natural gas vehicle RD&D.

INTRODUCTION

The American Gas Association (AGA), founded in 1918, represents 199 local energy companies that deliver clean natural gas throughout the United States. There are more than 70 million residential, commercial, and industrial natural gas customers in the United States, of which 91 percent—more than 64 million customers—receive their gas from AGA members. AGA is an advocate for natural gas utility companies and their customers and provides a broad range of programs and services for member natural gas pipelines, marketers, gatherers, international natural gas companies, and industry associates. Today, natural gas meets almost one-fourth of the United States' energy needs.

On behalf of AGA, I urge you to support increased RD&D funding by the DOE on the natural gas end-use technologies, which are powered by an energy source that is domestically abundant, affordable, stable, highly efficient, and clean.

To that end, we request a modest natural gas efficiency investment of $12 million in the Building Technologies Program, $30 million in the Transportation Program and $10 million for small-scale CHP, as well as supporting sufficient funding in the overall Industrial Program.

At a time when there is growing instability in oil-producing regions such as North Africa and the Middle East, which has resulted in $100 per barrel—and rising—oil

prices that threaten to derail our economic recovery, we believe that DOE needs to reassess its research and development (R&D) funding priorities. The DOE should join with us to develop highly efficient natural gas based appliances and systems. The natural gas industry, manufacturers and R&D partners will identify and capture financial support for this effort with 20 to 40 percent co-funding expected, depending on the type of R&D performed.

Currently, DOE spends hundreds of millions of dollars yearly on energy efficiency research, yet very little of this is directed toward energy efficient natural gas products. In particular, over the past several years there has been almost no Federal investment in natural gas technologies for residential and commercial buildings, the CHP Program in the Industrial Technologies Program has been dramatically reduced, and the R&D program for natural gas vehicles was totally eliminated in fiscal year 2006 through 2009. At a time when the value of natural gas for reducing carbon emissions is being recognized as never before, this is misguided.

We feel that it is way past time for the office of EERE, whose mandate is furthering America's energy efficiency, to re-engage in developing energy efficient natural gas-based technologies. Combining our cleanest and most-efficient fuel with new, highly efficient end-use technologies is the best way to ensure our economic viability in an increasingly carbon-constrained environment.

Such RD&D funding support must focus on highly efficient, superior performance technologies in which natural gas is used directly in the residential, commercial, industrial and transportation markets. Using natural gas directly in traditional end-use applications such as home heating, water heating and cooking, as well as increasingly in highly promising new applications such as natural gas vehicles and distributed—on-site—power generation, can save consumers millions of dollars, significantly reduce carbon emissions, and, given natural gas's domestic abundance, enhance our Nation's energy security.

In particular, we urge a small fraction of the funding in the Building Technologies Program at DOE's Energy Efficiency and Renewable Energy Office be dedicated to natural gas based efficiency technologies. A $12 million level would equate to approximately 5 percent of the appropriations for that office in 2010 and approximately 2 percent of the President's 2012 buildings budget request.

Specific Building program initiatives include:

Space Conditioning and Water Heating Efficiency and Operational Improvements—$2.9 Million

This effort will focus on laboratory testing, component and technology development and field testing of new gas space conditioning technologies and systems. The water heating R&D effort will improve performance and cost of components and assembly/installation of currently available or soon-to-be available systems for domestic or commercial water heating.

These efforts will be in conjunction with gas utilities working closely with component and equipment manufacturers. In the commercial sector, the space conditioning effort will focus on developing new and improving current gas-based thermally activated (e.g., absorption) systems appropriate for space cooling and humidity/indoor air quality control in commercial buildings, while helping alleviate peak electric demand constraints. Combined space/water heating systems will also be developed and tested through laboratory and field testing.

—Advance energy efficient technologies and systems for space and water heating in existing single and multi-family residential buildings and the light-commercial sector.
—Improve efficiency and reduce cost of highly efficient condensing gas furnaces and boilers that are poised for wider market adoption.
—Optimize strategies and technologies for the control of humidity and indoor air quality in conjunction with gas-based space heating and cooling systems.
—Reduce first costs of emerging tankless and storage type water heaters by at least 20 percent, while achieving efficiencies of more than 80 percent for non-condensing and 90 percent for condensing type units.
—Develop a combination space/water heating system with improved efficiency and reduced first cost to be used in residential, multi-unit, and commercial buildings.

Solar/Natural Gas Hybrid Systems—$2.8 Million

This effort will include technology development and laboratory and field testing, working with manufacturers of solar thermal or other renewable-resource systems. Particular attention will be given to integration/control and system sizing issues as well as safety and reliability (all of which will strongly impact commercial viability).

—Develop solar thermal-natural gas hybrid technology and products that cost-effectively generate heat, hot water, and steam, and thermally driven cooling—reducing carbon emissions and the use of fossil fuels.
—Improve storage and integration of lower temperature thermal heat (solar) with higher-temperature natural gas heat system.
—Integrate concentrated solar with natural gas energy systems.

Breakthrough Technology Development—$2.1 Million

This initiative will focus on developing and testing more advanced technologies and systems that will not be available for the market place for 3 to 7 years and will make extensive use of longer-term laboratory research. The main drivers for this research will be carbon emission reductions and improved efficiency thus producing the next wave of efficient and clean gas technologies for residential and commercial use. As promising technologies, components and systems emerge, appropriate lab and field testing will be conducted.

—Develop catalytic and other approaches for carbon management (e.g., formation, reduction, capture, conversion storage) of specific combustion byproducts like carbon dioxide or carbon monoxide.
—Support basic combustion research to improve efficiency, reduce pollutant formation, increase heat transfer to improve the operation of gas-based energy systems.
—Perform hydrogen enrichment mixtures to reduce carbon emissions from gas equipment—(a carbon mitigating approach may be to provide a percentage of hydrogen through the natural gas pipeline system).

Building Systems and Community Energy System Technologies—$2.6 Million

Parallel attention will be given to both residential and selected commercial buildings. Different RD&D programs will be developed for selected building types (e.g., residential single-family homes retrofit, new-construction homes, multifamily dwellings, retail building, and institutional building) and regions (e.g., Northeast, Southwest). RD&D will include laboratory research but will also comprise extensive testing in instrumented buildings that will serve as field test facilities. R&D will be coordinated with architects and builders as well as developers and manufacturers of emerging energy systems and associated components and controls.

—Develop approaches for optimized integration of gas systems with the evolving Smart Energy Grid providing consumers new option for energy management, comfort control and communication with energy providers.
—Perform advanced energy efficiency and carbon emission analysis utilizing full fuel cycle protocol, develop new scientific data and tools to support lowering overall energy use and carbon emissions in homes and buildings.
—Improve the efficiency and flexibility of operation of gas-based equipment when used in combination with emerging building technologies, new communications systems and other energy systems.

Development of Higher-Efficiency and ENERGY STAR-rated Commercial Food Service Equipment $1.6 Million

This effort will include laboratory development and field testing, working with manufacturers and food service preparers. It will develop improved components that will increase energy efficiency, reduce emissions, and improve the productivity of ranges, ovens, grills, griddles, fryers, and other food preparation products.

—Develop new cooking equipment designed to improve the currently very low efficiency for natural gas cooking equipment.
—Reduce combustion related emissions from gas-fueled residential and commercial cooking equipment.
—Improve the performance and reduce the cost of critical heat transfer components in residential and commercial cooking equipment.

In the industrial Program in DOE's Energy Efficiency and Renewable Energy Office, we encourage overall funding that accommodates a total of $30 million for CHP (the budget request level and the fiscal year 2010 appropriations are both $25 million). At least $8 million of these funds should be dedicated to small-scale systems below 20 kW. We also support a budget that directs at least $25 million to the Industries of the Future (Specific) Program, which would be in line with appropriated levels for the past several years and would be used to develop the technologies used in our Nation's heavy industries to manage their energy expenditures.

Specific CHP initiatives include:

Small-Scale CHP Research and Development—$8 Million

Micro Combined Heat and Power Products (10kW or less).—Develop, using existing technological breakthroughs, a system which would provide on-site elec-

tric power and domestic hot water and heating for homes and small businesses utilizing either propane or natural gas. This will include development of "dark start" technology for use in communities where there is an inability to deliver reliable electricity via traditional central power station and transmission/distribution systems.

Gas Heat Pump Technology (7.5–15– tons).—Continue previous DOE efforts in gas-fired heat pumps (80-percent reduction in electric peak demand in cooling and 150-percent efficiency in heating mode). Necessary work:

—fuel management and control development;

—heat recovery to provide domestic hot water and space heating; and

—power generation.

Further enhancements of the heat exchangers, engine, and compressors will result in improved efficiency and lower first costs. This will include development of auxiliary power capability for plug-in hybrid fueling or other potential critical power loads.

Emissions and Carbon Footprint Reductions Reasearch and Development.—Continue ongoing activity. Although the GHP and Micro-CHP products meet the current air-quality requirements, further emission reductions are being anticipated. This program would take a pro-active stewardship toward reducing product carbon footprints for small engine technology that requires particular attention.

Thank you for the opportunity to submit testimony.

PREPARED STATEMENT OF THE AMERICAN GEOLOGICAL INSTITUTE

To the chairman and members of the subcommittee: Thank you for this opportunity to provide the American Geological Institute's (AGI) perspective on fiscal year 2012 appropriations for geoscience programs within the subcommittee's jurisdiction. The President's budget request for the Department of Energy (DOE) research programs provides important and modest investments in research and development (R&D) that will help support economic growth, job creation and energy independence, diversification and sustainable management. AGI strongly supports the wise and increased investments in the Office of Science ($5.4 billion) and Energy Efficiency and Renewable Energy ($3.2 billion) (particularly the increase for geothermal R&D within EERE). AGI strongly supports investments in geoscience education, training, and workforce development through the Office of Science's Workforce Development for Teachers and Scientists ($35 million).

AGI is concerned about the termination of limited investments in oil and natural gas R&D within the Office of Fossil Energy. Oil and natural gas supply 62 percent of our Nation's energy and will continue to play a major role in the future. These investments will drive innovation to support and improve safe and effective domestic development of clean fossil fuels. The bulk of DOE's oil and gas R&D investments go to institutions of higher education for training and research. The United States has a substantial workforce and significant investments in oil and natural gas research, development, exploration, and production. Steady, but modest Federal investments in fossil energy R&D with a longer-term strategic plan would benefit the academic, private, and public sectors.

The Office of Fossil Energy suffers from an unbalanced portfolio that focuses primarily on coal, faces uncertainty about direction and investments, and receives inconsistent funding. We ask for the subcommittee's support for oil and gas, unconventional natural gas, geothermal, hydropower, methane hydrates and carbon sequestration R&D so the Nation can develop a diverse portfolio of energy resources while enhancing carbon mitigation strategies to secure clean, affordable, and secure energy supplies for now and the future.

AGI is a nonprofit federation of 49 geoscientific and professional associations that represents more than 120,000 geologists, geophysicists, and other earth scientists. The institute serves as a voice for shared interests in our profession, plays a major role in strengthening geoscience education, and strives to increase public awareness of the vital role that the geosciences play in society's use of resources and interaction with the environment.

DEPARTMENT OF ENERGY'S OFFICE OF SCIENCE

The DOE Office of Science is the single largest supporter of basic research in the physical sciences in the United States, providing more than 40 percent of total funding for this vital area of national importance. The Office of Science manages fundamental research programs in basic energy sciences, biological and environmental sciences, and computational science and, under the budget request, would grow by

about 9 percent from about $4.9 billion in 2010 to $5.4 billion in fiscal year 2012. AGI asks that you support this much needed increase.

The President's request would provide $35 million for Workforce Development for Teachers and Scientists, a program aimed at ensuring that DOE and the Nation have a sustained pipeline of highly skilled and diverse science, technology, engineering, and mathematics (STEM) workers. AGI strongly supports investments in geoscience education, training, and workforce development within DOE and other Federal agencies.

DEPARTMENT OF ENERGY'S ENERGY EFFICIENCY AND RENEWABLE ENERGY

Within Energy Efficiency and Renewable Energy, the President's fiscal year 2012 budget request would increase investments for R&D for many renewable energy resources. AGI applauds the $102 million requested for geothermal R&D and greatly appreciates previous support from the Congress for this key alternative energy resource. The geothermal research program within the renewable energy account, which funds Earth science research in materials, geofluids, geochemistry, geophysics, rock properties, reservoir modeling, and seismic mapping will provide the Nation with the best research to build a successful and competitive geothermal industry. AGI also supports an Energy Innovation Hub focused on critical materials and hope this hub will consider ways to improve exploration, extraction, and processing of necessary raw materials as well as replacement materials.

DEPARTMENT OF ENERGY'S FOSSIL ENERGY RESEARCH AND DEVELOPMENT

AGI urges you to look critically at the Fossil Energy Research and Development portfolio as you prepare to craft the fiscal year 2012 Energy and Water Development appropriations bill. Many Members of Congress have strongly emphasized the need for a responsible, diversified, and comprehensive energy policy for the Nation. The growing global competition for fossil fuels has led to a repeated and concerted request by the Congress to ensure the Nation's energy security. The President's proposal, which provides no funding for oil and gas R&D, is short sighted and inconsistent with congressional and public concerns. No funding for oil and gas R&D will hinder our ability to achieve energy stability and security.

The research dollars invested in oil and gas R&D go primarily to universities, State geological surveys, and research consortia to address critical issues like enhanced recovery from known fields and unconventional sources that are the future of our natural gas supply. This money does not go into corporate coffers, but it helps American businesses remain competitive by giving them a technological edge over foreign companies. All major advances in oil and gas production can be tied to research and technology. AGI strongly encourages the subcommittee to ensure a balanced and diversified energy research portfolio that does not ignore the Nation's primary sources of energy for the near future, fossil fuels.

Thank you for the opportunity to present this testimony to the subcommittee.

PREPARED STATEMENT OF THE AMERICAN PUBLIC POWER ASSOCIATION

The American Public Power Association (APPA) respectfully requests funding for the Renewable Energy Production Incentive, Power Marketing Administrations, storage for high-level nuclear waste, the Nuclear Loan Guarantee Program, the Department of Energy Water Power Program, energy conservation, weatherization, clean coal, fuel cells, fuel and powering systems, the Navajo Electrification and Demonstration Program and the Federal Energy Regulatory Commission (FERC).

APPA is the national service organization representing the interests of more than 2,000 municipal and other State and locally owned electric utilities in 49 States (all but Hawaii). Collectively, public power utilities deliver electricity to 1 of every 7 electric consumers (approximately 46 million people), serving some of the Nation's largest cities. However, the vast majority of APPA's members serve communities with populations of 10,000 people or less.

We understand that the Congress is operating in a tight fiscal environment. APPA's priority is to support programmatic requests that bring down costs, conserve resources, or benefit our public power customers in other ways. We appreciate the opportunity to submit this statement outlining our fiscal year 2012 funding priorities within the jurisdiction of the Energy and Water Development Subcommittee.

Renewable Energy Production Incentive (REPI).—APPA is disappointed that the administration and the Congress have decided to stop funding the REPI. REPI was the first attempt by the Congress to provide comparable renewable incentives to the nonprofit electric utility industry and we continue to seek comparability to this day.

The elimination of funding for the REPI program was a step backward in this process. Defunding not only decreases incentives for new production, but utilities who had been receiving the funding are stranded mid-program. Five million dollars would restore funding to the program for fiscal year 2012, but any funding would help restore payments to those already approved for the incentive.

POWER MARKETING ADMINISTRATIONS

Power Marketing Administrations Proposals.—The President's National Commission on Fiscal Responsibility and Reform proposed a measure for all four Power Marketing Administrations (PMA) that would have had the effect of raising the rates for PMA customers. We appreciate that the fiscal year 2012 request did not include this type of proposal.

Purchase Power and Wheeling.—We urge the subcommittee to authorize appropriate levels for use of receipts so that the Western Area Power Administration (WAPA), the Southeastern Power Administration (SEPA) and the Southwestern Power Administration (SWPA) can continue to purchase and wheel electric power to their municipal and rural electric cooperative customers. Although appropriations are no longer needed to initiate the purchase power and wheeling (PP&W) process, the subcommittee continues to establish ceilings on the use of receipts for this important function. The PP&W arrangement is effective, has no impact on the Federal budget, and is supported by the PMA customers who pay the costs. We support an increase over the funding levels of the administration's budget for fiscal year 2012, which are as follows:

—$307 million for WAPA;
—$100 million for SEPA; and
—$40 million for SWPA.

Construction.—We urge the subcommittee to authorize appropriate levels of funding for the construction budgets of WAPA, SEPA, and SWAPA. These budgets have continued to decrease over the years however, this funding remains critical to the operation and maintenance of the PMAs.

Storage for High-Level Nuclear Waste.—APPA is disappointed that the administration closed the Yucca Mountain Project and the Office of Civilian Radioactive Waste Management in fiscal year 2010. We support the work of the Blue Ribbon Commission on America's Nuclear Future and look forward to hearing the Commission's recommendations on how the Nation should manage nuclear waste.

Nuclear Loan Guarantees.—APPA is pleased with the administration's request for DOE Loan Guarantee authority up to $36 billion for new nuclear facilities and encourages the subcommittee to maintain this level of funding.

DOE Water Power Program.—APPA was extremely disappointed that funding for water power was decreased by 20 percent while all other renewable resources were increased in the administration's fiscal year 2012 request. APPA believes there should be parity among renewable resource funding. APPA requests $100 million for fiscal year 2012 for the DOE's Water Power Program. At a time when utilities around our country must focus on finding carbon-free sources of energy because of pending State and Environmental Protection Agency regulations, the importance of hydropower research and development is more important than ever before. Not only is hydropower a renewable resource, but it can be used as baseload generation to back up more intermittent renewables such as wind and solar power.

Energy Conservation.—APPA appreciates the funding increases for energy efficiency programs provided in the President's budget. The budget funding levels for fiscal year 2012 are as follows:

—Building technologies—$470 million;
—Industrial technologies—$319 million;
—Federal Energy Management Program—$33 million; and
—Vehicle technologies—$588 million.

We urge the subcommittee to maintain these funding levels.

Weatherization and Intergovernmental Activities.—We are pleased that the administration has requested $394 million for the weatherization program in fiscal year 2012, a significant increase from fiscal year 2010, and we encourage the subcommittee to maintain that level of funding.

Clean Coal Power Initiative and FutureGen.—APPA is disappointed that the budget did not include funding for large-scale commercial applications of carbon capture and sequestration technology. We encourage the subcommittee to include funding for Clean Coal Power Initiative (CCPI) and FutureGen. APPA strongly believes as the need for clean-energy increases, the FutureGen project, or something similar, will be critical in nearing us to the goal of the world's first near-zero-emissions coal fired plant. We urge the subcommittee and the Congress to work with the adminis-

tration on finding an appropriate role and funding level for the FutureGen project and CCPI.

Fuel Cells.—APPA was disappointed that the administration requested zero funding for fuel cell related research and development. We urge the subcommittee to allocate additional funding for this program for fiscal year 2012.

Fuels and Power Systems.—We recommend these funding levels for the following programs:

Innovations for Existing Plants.—$84 million;
Advanced Integrated Gasification Combined Cycle.—$80 million;
Turbines.—$45 million;
Carbon Sequestration.—$150 million;
Fuels.—$25 million; and
Advanced Research.—$48 million.

Navajo Electrification Demonstration Program.—APPA supports full funding for the Navajo Electrification Demonstration Program at its full authorized funding level of $15 million. The purpose of the program is to provide electric power to the estimated 18,000 occupied structures in the Navajo Nation that lack electric power. This program has been consistently underfunded.

FERC.—The fiscal year 2012 budget requests $305 million for FERC, an increase more than fiscal year 2010 levels. APPA supports this increase.

PREPARED STATEMENT OF THE AMERICAN SOCIETY FOR MICROBIOLOGY

The American Society for Microbiology (ASM) is pleased to submit the following testimony on the fiscal year 2012 appropriation for science programs at the Department of Energy (DOE). The ASM is the largest single life science organization in the world with more than 38,000 members. The ASM mission is to enhance the science of microbiology, to gain a better understanding of life processes, and to promote the application of this knowledge for improved health and environmental well-being.

ASM supports the administration's proposed fiscal year 2012 budget of $5.4 billion for the DOE's Office of Science, a 9.1-percent increase more than the fiscal year 2010 appropriation level. The proposed fiscal year 2012 budget will enable the Office of Science to continue its leadership in critical areas including:

—renewable energy;
—environmental cleanup;
—carbon capture and sequestration;
—climate change; and
—basic research across the physical and biological sciences.

DOE investments in science and technology create new industries and jobs, and strengthen United States basic research capabilities. The Office of Science funds research in academic institutions, DOE laboratories and technology centers that employ more than 30,000 scientists and engineers. In fiscal year 2012, more than 26,000 researchers from universities, national laboratories, industry and international groups are expected to use DOE's world-renowned research facilities.

The Office of Science is the largest Federal sponsor of basic research in the physical sciences as well as the largest Federal funder of materials and chemical sciences. The 10 national laboratories directly overseen by the Office of Science are world leaders in basic and applied research, generating breakthroughs in multiple disciplines. DOE provides scientific expertise to address challenges including events in postearthquake Japan, the search for clean energy, and many environmental challenges.

ASM has a specific interest in microbiological research overseen by the Biological and Environmental Research (BER) program. Microorganisms are essential to research areas like biofuels and environment remediation. ASM recommends congressional approval of the proposed budget increase for the BER program to $718 million, about 22 percent more than the fiscal year 2010 level.

DEPARTMENT OF ENERGY'S INVESTMENTS IN BIOLOGICAL AND ENVIRONMENTAL RESEARCH YIELD INNOVATIVE SOLUTIONS

The Biological and Environmental Research program cuts across scientific and engineering disciplines to understand complicated biological, climatic, and environmental systems. BER-funded research has advanced scientific knowledge providing the foundational research to support biofuels development, monitor subsurface contaminants and expose the effects of greenhouse gas emissions. BER funding is also responsible for new research tools that help investigators explore the interface of biological and physical sciences.

The BER research portfolio has transformed science and technology in the United States. An example is the Human Genome Project initiated by BER in 1986, a catalyst for the biotechnology industry and the emerging field of systems biology. BER-sponsored activities have helped shape modern climate science with powerful climate modeling capabilities. BER's computing experts and facilities have guided new disciplines dependent upon high-end computer resources, such as computational biology and bioinformatics. DOE funding has influenced scientific discovery. Recent examples include:

—Use of a newly patented group of naturally occurring microbes to detoxify chlorinated solvents that contaminate a former DOE reactor site, improving groundwater quality;

—Genetic mapping of plant digesting microbes from the cow rumen, generating 270 billion letters of the DNA code in a massive data-collecting effort to understand how to efficiently degrade plant biomass for biofuels production; and

—Atomic-scale xray crystallography studies that identified microbial proteins possibly key to formation of drug-resistant biofilms, suggesting new antibiotic targets.

The fiscal year 2012 budget proposes increases for the areas of genomic science and computational biosciences, as well as for BER's Joint Genome Institute, Structural Biology Infrastructure and programs.

BER's major scientific goals for fiscal year 2012 include advances in genomic science, radiological sciences, climate research, and subsurface biogeochemistry. Relevant research will be distributed between BER's two subprograms, Biological Systems Science Division (BSSD) and Climate and Environmental Sciences Division (CESD). The former focuses on fundamental principles related to function and structure of living systems from microbes to mammals, while the latter examines environmental impacts of energy production and use. Both rely heavily on microbiological systems and techniques.

The fiscal year 2012 request for BSSD is $376 million, an increase from the fiscal year 2010 level of $310 million. In fiscal year 2012, CESD would receive nearly $342 million compared to $278 million in fiscal year 2010. Within CESD, Environmental System Science activities increase by 22 percent. BER budgets also include support for world class facilities and research consortia. The BSSD subprogram manages the Joint Genome Institute, the Bioenergy Science Center, the Joint Bioenergy Institute, and three DOE Bioenergy Research Centers. The CSSD oversees two scientific user facilities, the Atmospheric Radiation Measurement Climate Research Facility and the Environmental Molecular Sciences Laboratory (EMSL). The Joint Genome Institute is now sequencing more than 4 trillion genome base pairs annually (more than 130 times that of 5 years ago), while EMSL with its powerful instrumentation and computing housed at DOE's Pacific Northwest National Laboratory, leads worldwide efforts in the field of proteomics. Results reported from BER-funded research in the past year include:

—Scientists at Massachusetts Institute of Technology concluded that various microbial species cooperate in marine environments during their cycling of organic matter, important to the global carbon cycle (BSSD-funded).

—Bioenergy Science Center studies described a new method to genetically modify the cellulose-degrading bacterium Clostridium thermocellum, with potential to expedite critical degradation steps in biofuels production. DOE scientists at Princeton University developed the first-ever quantitative model for metabolic processes in another Clostridium species that produces butanol, ethanol, and hydrogen during biomass fermentation and is already used by industry—a step toward engineering the microbe for biofuels synthesis.

—Another collaborative CESD study determined that different microorganisms convert soluble uranium to different forms of reduced uranium, pertinent to controlling contaminants at nuclear sites. Other researchers used microbial fuel cell techniques and electrodes inserted into soil to monitor microbial activity as related to the progress of uranium bioremediation, a technique also applicable to other microbial processes in the environment.

DEPARTMENT OF ENERGY'S RESEARCH BUILDS RESEARCH AND DEVELOPMENT INFRASTRUCTURE, WORKFORCE

DOE science programs have evolved and expanded into an R&D infrastructure unparalleled in specific areas of science, technology, engineering, and mathematics. DOE laboratories operate sophisticated equipment often not available elsewhere, and large numbers of non-DOE researchers from the United States and other countries regularly use DOE facilities to conduct studies that would otherwise be impossible.

The DOE Office of Science has built extraordinary research capabilities, including particle accelerator centers, advanced computational centers, and atmospheric monitoring facilities. As an example, EMSL offers users a supercomputer and more than 60 major instruments to support environmental sciences, serving more than 700 users annually. In the past year, an international team of more than 80 researchers from 21 institutions used the world's first hard xray free-electron laser, the Linac Coherent Light Source at DOE's Stanford Linear Accelerator Center National Accelerator Laboratory, to produce the first single-shot images of intact viruses, expected to lead to eventual videos of molecules, viruses and live microbes in action.

Innovative research tools developed at the national labs or other DOE-funded institutions regularly stimulate multiple scientific fields, often transferring to the technology marketplace as valuable commercial products. The DOE toolkit includes research protocols, monitoring and measuring equipment, computer models and databases, and considerably more. One commercialized example is the PhyloChip developed by DOE scientists that can detect up to 50,000 species of bacteria and archaea in a single environmental sample, which was deployed at last year's gulf oil spill. The innovation has already spawned a start-up company and is expected to have broad applications in monitoring. At BER's Joint Bioenergy Institute, scientists developed a mass spectrometry-based detection technique called multiple-reaction monitoring, to more efficiently and accurately identify microbial proteins that convert cellulosic sugars to biofuels. Last year, BER-sponsored university scientists introduced an optimization method that delineates all possible metabolic pathways in an organism like biofuels-related bacteria, then suggests which genetic changes could trick the microbe into overproducing a desired product like ethanol.

The Office of Science also supports the Workforce Development for Teachers and Scientists (WDTS) program, at $35.6 million, a substantial 72-percent increase more than fiscal year 2010. The WDTS program continues DOE's long history of training scientists, mathematicians, and engineers as U.S. technical workforce, principally through research grants and contracts at universities, the private sector, and DOE's own laboratories. The program also reaches out to all academic levels. Each year, participants in training and education programs at DOE laboratories include—

—more than 250,000 K–12 students;
—22,000 K–12 educators;
—4,000 undergraduate interns;
—3,000 graduate students; and
—1,600 postdoctoral employees.

In 2010, a new graduate fellowship program selected its first cohort of 150 students, beginning an initiative to attract more students to careers in physics, chemistry, biology, mathematics, engineering, environmental sciences, or computer sciences.

DEPARTMENT OF ENERGY'S PARTNERSHIPS ELEVATE U.S. SCIENCE AND TECHNOLOGY

The BER program collaborates with other Federal agencies including the National Science Foundation, the Department of Agriculture (USDA), the National Institutes of Health, and the Department of Defense, to optimize complementary research. DOE and USDA, for example, share similar goals in finding new bioenergy sources while DOE's climate change studies integrate closely with those in multiple Federal agencies. DOE collaborations extend to academia, industry, nonprofits, and international partners. The Office of Science funds more than 7,000 individual research projects at universities, national laboratories, U.S. industry, and the nonprofit sector. In fiscal year 2012, the BER budget would support approximately 2,400 researchers and graduate students in more than 200 U.S. Federal, academic, and private institutions. DOE personnel also advise non-DOE scientists and policymakers; about 40 DOE experts have travelled to Japan with more than 17,000 pounds of equipment to help monitor radiation released by the recent earthquake.

Extramural DOE funding contributes significantly to science and technology achievements. More than 110 Nobel laureates have received DOE support, as did two recipients of the 2011 Franklin Institute Medal. Last year, 39 DOE-funded projects garnered R&D 100 Awards which recognize the world's most promising new products, processes, materials, or software that had entered the market the previous year. DOE funding has supported the basic research for 800 R&D 100 winners since 1962.

CONCLUSION

ASM recommends that the Congress approve the proposed fiscal year 2012 budget for the DOE science programs that support diverse often large-scale research,

uniquely important to the U.S. economy, national security, a healthy environment and the future status of U.S. science and technology.

PREPARED STATEMENT OF THE AMERICAN SOCIETY OF AGRONOMY; CROP SCIENCE SOCIETY OF AMERICA; AND THE SOIL SCIENCE SOCIETY OF AMERICA

The American Society of Agronomy (ASA), Crop Science Society of America (CSSA), and Soil Science Society of America (SSSA) are pleased to submit the following funding recommendations for the Department of Energy (DOE) for fiscal year 2012. For the Office of Science, ASA, CSSA, and SSSA recommend a funding level of $5.4 billion.

With more than 25,000 members and practicing professionals, ASA, CSSA, and SSSA are the largest life science professional societies in the United States dedicated to the agronomic, crop and soil sciences. ASA, CSSA, and SSSA play a major role in promoting progress in these sciences through the publication of quality journals and books, convening meetings and workshops, developing educational, training, and public information programs, providing scientific advice to inform public policy, and promoting ethical conduct among practitioners of agronomy and crop and soil sciences.

DEPARTMENT OF ENERGY OFFICE OF SCIENCE

ASA, CSSA, and SSSA understand the challenges the Senate Energy and Water Development Appropriations Subcommittee faces with the tight budget for fiscal year 2012. We also recognize that the Energy and Water Development Appropriations bill has many valuable and necessary components, and we applaud the subcommittee for the support provided to the Department of Energy (DOE) Office of Science. For fiscal year 2012, ASA, CSSA, and SSSA recommend a funding level of $5.4 billion.

The Congress approved the America COMPETES Reauthorization Act of 2010 (Public Law 111–358), recognizing that an investment in basic (discovery) scientific research is essential to providing America the brainpower necessary to maintain a competitive advantage in the global economy and keep U.S. jobs from moving overseas. Such an investment is needed to keep U.S. science and engineering at the forefront of global research and development in the biological sciences and geosciences, computing and many other critical scientific fields. The Office of Science supports graduate students and postdoctoral researchers early in their careers. However, because of the uncertainty of the Federal budget, the Office of Science was not able to provide the essential support needed in fiscal year 2011. As a result, it is important that increase emphasis is placed on these programs in fiscal year 2012. Nearly one-third of its research funding goes to support research at more than 300 colleges and universities nationwide. The Office of Science also reaches out to America's youth in grades K–12 and their teachers to help improve students' knowledge of science and mathematics and their understanding of global energy and environmental challenges. This recommended funding level of $5.4 billion is critical to ensuring our future energy self-sufficiency and as a means to address major environmental challenges including global climate change. Finally, a funding level of $5.4 billion will allow the Office of Science to:

—maintain and strengthen DOE's core research programs at both the DOE national laboratories and at universities;
—provide support for Ph.D.s, postdoctoral associates, and graduate students;
—ensure maximum utilization of DOE research facilities; and
—allow the Office of Science to develop and construct the next-generation facilities necessary to maintain U.S. pre-eminence in scientific research.

Basic Energy Sciences

Within the Office of Science, the Basic Energy Sciences (BES) program is a multipurpose, scientific research effort that fosters and supports fundamental research to expand the scientific foundations for new and improved energy technologies and for understanding and mitigating the environmental impacts of energy use. The research disciplines that the BES program supports include condensed matter and materials physics, chemistry, soil, mineralogical, and geosciences, influencing virtually every aspect of energy resources, production, conversion, transmission, storage, efficiency, and waste mitigation. Research in geosciences leads to advanced monitoring and measurement techniques for reservoir definition. The BES program is one of the Nation's largest sponsors of research in the natural sciences. In fiscal year 2010, the program funded research in more than 170 academic institutions located in 50 States and in 14 DOE laboratories located in 12 States. Thus, approxi-

mately 40 percent of the BES program's research activities are sited at academic institutions.

Within the BES program, the chemical sciences, geosciences, and energy biosciences subprogram supports fundamental research in soil, biogeochemistry, geophysics, and biosciences. We support funding this subprogram at $394.7 million in fiscal year 2012.

Within BES there exists several critical pieces of equipment essential for elucidating the soil's potential to provide essential services—carbon sequestration, nutrient cycling, water purification, waste treatment, provisioning of industrial and pharmaceutical goods, and a mitigating sink for chemical and biological agents—that enhance the resilience of managed and natural systems.

As such, the Societies support the increases included in the President's budget for the major items of equipment projects, including the Linac Coherent Light Source (LCLS) at SLAC National Accelerator Laboratory, the world's first hard xray free electron laser (FEL), which produces ultrafast pulses of xrays millions of times brighter than even the most powerful synchrotron light sources. The LCLS provides scientists with a unique tool for studying the arrangement and motion of atoms and electrons in metals, semiconductors, ceramics, polymers, catalysts, plastics, and biological molecules with the potential to significantly impact advanced energy research and other fields. The societies support the requested increase for the LCLS included in the President's fiscal year 2012 budget (+$30,000,000 more than fiscal year 2010) to extend the xray spectral range at the LCLS.

Our soil scientists also are users of the National Synchrotron Light Source (NSLS–II) built to enable the study of material properties and functions, particularly materials at the nanoscale, at a level of detail and precision never before possible. We support the increase requested in fiscal year 2012 (+$12,000,000 more than fiscal year 2010) to initiate the fabrication of approximately 5 to 6 additional instruments.

The Geosciences Research Program supports research focused at developing an understanding of fundamental Earth processes that can be used as a foundation for efficient, effective, and environmentally sound use of energy resources, and provide an improved scientific basis for advanced energy and environmental technologies. We support the $19.3 million increase proposed by the President to the Geosciences program, specifically for the purposes of continuing to expand research on geochemical studies and computational analysis of complex subsurface fluids and solids.

Biological and Environmental Research

Within the Office of Science, the Biological and Environmental Research (BER) program, for more than five decades, has advanced environmental and biological knowledge that supports national security through improved energy production, development, and use; international scientific leadership that underpins our Nation's technological advances; and research that improves the quality of life for all Americans. BER supports these vital national missions through competitive and peer-reviewed research at national laboratories, universities, and private institutions. ASA, CSSA, and SSSA support the funding of the BES at the President's requested level for fiscal year 2012 of $717.9 million. A variety of programs within BER are essential to continued fundamental research about biological systems science, geochemical observations, and determining environmental sustainability of our energy production systems. Among other items, the DOE Bioenergy Research Centers, the Joint Genome Institute, the Environmental Molecular Science Laboratory, and biological sequencing science are essential for overcoming the challenges of ensuring our Nation's energy security and environmental health.

The Climate and Environmental Sciences subprogram, Environmental Systems Science will support essential subsurface biogeochemical research and basic research on the fate and transport of contaminants in the subsurface. The ASA, CSSA, and SSSA support funding for Environmental Systems Science at $104.2 million for fiscal year 2012, a level which would retain funding for the Terrestrial Carbon Sequestration Research, while also investing in research on contaminant transport to ensure minimal risk to exposure. This research addresses unique physical, chemical, and biological processes controlling the flux of contaminants across and within the root zone of soils and the flux of contaminants to surface water bodies. Processes in these critical zones influence fluxes of carbon and key nutrients between the atmosphere and terrestrial biosphere.

IDENTIFYING ESSENTIAL RESEARCH

Our members participated in the community-based workshop in March 2010 that developed the workshop report, "Complex Systems Science for Subsurface Fate and Transport." The report emphasized the need to understand the role that subsurface

biogeochemical processes play in determining the fate and transport of contaminants including heavy metals and radionuclides. Participants concluded that computational models of coupled biological, geochemical, and hydrological processes are needed to predict the rates and kinetics of transformation and sequestration of these critical DOE contaminants.

Within BER, we support the increase included in the President's budget for the Genomic Science Program, to bring the total level of funding to $241.5 million for fiscal year 2012. The Joint Genome Institute within the Genomic Program is an essential infrastructural component which uses tools from contemporary systems biology to understand and predict the energetic relationships between microbes and plants. The increase would support synthetic molecular toolkits that predict, design, construct, and test new biological systems for clean-energy solutions.

NATIONAL LABORATORIES

The Office of Science manages 10 world-class laboratories, which often are called the "crown jewels" of our national research infrastructure.

National Energy Technology Laboratory

National Energy Technology Laboratory's Carbon Sequestration Program is helping to develop technologies to capture, purify, and store carbon dioxide (CO_2) in order to reduce greenhouse gas emissions without adversely influencing energy use or hindering economic growth. Program efforts in this area are focused on increasing carbon uptake on mined lands and evaluation of no-till agriculture, reforestation, rangeland improvement, wetlands recovery, and riparian restoration.

Oak Ridge National Laboratory

Oak Ridge National Laboratory (ORNL) is one of the world's premier centers for research and development on energy production, distribution, and use and on the effects of energy technologies and decisions on society. Clean, efficient, safe production, and use of energy have long been our goals in research and development. At ORNL, unique facilities for energy-related R&D are used both for technology development and for fundamental investigations in the basic energy sciences that underpin the technology work.

Thank you for your thoughtful consideration of our requests.

PREPARED STATEMENT OF THE AMERICAN SOCIETY OF PLANT BIOLOGISTS

On behalf of the American Society of Plant Biologists (ASPB), we submit this statement for the official record to support the requested level of $5.42 billion for the Department of Energy (DOE) Office of Science for fiscal year 2012. The testimony highlights the importance of biology—particularly plant biology—as the Nation seeks to address vital issues such as energy security.

ASPB and its members recognize the difficult fiscal environment our Nation faces, but believe investments in scientific research will be a critical step toward economic recovery. We would also like to thank the subcommittee for its consideration of this testimony and for its support for the basic research mission of the DOE Office of Science.

ASPB is an organization of approximately 5,000 professional plant biology researchers, educators, graduate students, and postdoctoral scientists with members in all 50 States and throughout the world. A strong voice for the global plant science community, our mission—achieved through work in the realms of research, education, and public policy—is to promote the growth and development of plant biology, to encourage and communicate research in plant biology, and to promote the interests and growth of plant scientists in general.

FOOD, FUEL, ENVIRONMENT, AND HEALTH—PLANT BIOLOGY RESEARCH AND AMERICA'S FUTURE

Plants are vital to our very existence. They harvest sunlight, converting it to chemical energy for food and feed; they take up carbon dioxide and produce oxygen; and they are the primary producers on which all life depends. Indeed, plant biology research is making many fundamental contributions in the areas of domestic fuel security and environmental stewardship; the continued and sustainable development of better foods, fabrics, pharmaceuticals, and building materials; and in the understanding of basic biological principles that underpin improvements in the health and nutrition of all Americans. In fact, the 2009 National Research Council (NRC) report "A New Biology for the 21st Century" placed plant biology at the center of urgent priorities in energy, food, health, and the environment.

In particular, plant biology is at the center of numerous scientific breakthroughs in the increasingly interdisciplinary world of alternative energy research. For example, interfaces among plant biology, engineering, chemistry, and physics represent critical frontiers in both basic biofuels research and bioenergy production. Similarly, with the increase in plant genome sequencing and functional genomics, the interface of plant biology and computer science is essential to our understanding of complex biological systems ranging from single cells to entire ecosystems.

Despite the fact that plant biology research—the kind of research funded by DOE—underpins so many vital practical considerations for our country, the amount invested in understanding their basic function and mechanisms is relatively small when compared with broader impacts on areas including energy security and economic development.

RECOMMENDATIONS

Because of our membership's extensive expertise, ASPB is in an excellent position to articulate the Nation's plant science priorities as they relate to bioenergy and, specifically, with regard to recommendations for bioenergy research funding through the DOE's Office of Science.

Within the Office of Science, the programs in BER and BES are crucial to understanding how basic biological processes work. For this reason ASPB is supportive of the fiscal year 2012 request to fund BER at $717.9 million and BES at $1.985 billion. Sustained funding for these programs is vital as the discoveries made in these areas will ultimately be the foundation for the next fuels and technologies we use in our daily lives.

In addition:

—We commend the DOE Office of Science, through their programs in Basic Energy Sciences and Biological and Environmental Research for funding the Bioenergy Research Centers and the Energy Frontier Research Centers. These centers provide a model for collective science innovation that complements DOE's essential investment in individual investigator and small group science. ASPB strongly encourages funding for the DOE Office of Science that would be specifically targeted to the funding of individual or small group grants for bioenergy research.

—Photosynthetic research is one clear example of an interface between the physical sciences and biology. Indeed, the importance of disciplinary integration is a central theme of several recent NRC reports including "A New Biology for the 21st Century, Research at the Intersection of the Physical and Life Sciences, and Inspired by Biology: From Molecules to Materials to Machines". The DOE Office of Science has been the major source of funding for fundamental studies of photosynthesis, which is the primary source of chemical energy on the planet. However, the current funding available for photosynthetic research is not commensurate with the central role that photosynthesis plays in energy capture and carbon sequestration. Hence, ASPB calls for the Office of Science to expand its research portfolio in the area of photosynthesis and carbon capture.

—Considerable research interest is now being paid to the use of plant biomass for energy production. If biomass crops are to be used to their full potential, however, considerable effort must be expended to improve our understanding of their basic biology and development, as well as their agronomic performance. Therefore, ASPB calls for DOE to support research targeted at efforts to increase the utility and agronomic performance of bioenergy crops and to enhance understanding of plant cell walls and the production of cellulosic biomass.

Thank you for your consideration of our testimony on behalf of the American Society of Plant Biologists.

PREPARED STATEMENT OF THE AMERICAN WIND ENERGY ASSOCIATION

INTRODUCTION

After experiencing a record year of growth in 2009, the American wind industry installed just more than 5,000 megawatts (MW) of capacity last year. Two of the principal causes for the decrease were the reduced demand for electricity due to the economic slowdown and the low price of natural gas compared with historic levels. Wind systems are commercially deployable today and cost-competitive with virtually all other new electricity generation sources. In addition, polling consistently shows that a strong majority of Americans want more wind power. Just last year, 89 percent of American voters (84 percent of Republicans, 88 percent of Independents, and 93 percent of Democrats) agreed that increasing the amount of energy our Nation

gets from wind energy is a good idea.[1] However, keeping America's domestic wind industry competitive with other generation sources and the wind industry in other countries depends in part on increased research, development, and deployment (RD&D) funding to reduce costs and improve reliability.

The American Wind Energy Association (AWEA) requests a funding level of $144.2 million for fiscal year 2012 for the Department of Energy's (DOE) Wind Energy Program, an increase of $17.3 million more than the President's congressional budget request. Of this amount, AWEA requests that an additional $10.1 million be designated for the integration of variable power sources. An additional $6.2 million should be provided for the R&D of advanced technology components, and an additional $1 million should be provided for the study of wind energy and wildlife interactions. While we recognize that DOE has proposed a $64 million increase in funding for needed offshore wind R&D and generally concur with the proposed research activities, we wish to re-emphasize the importance of expanded R&D for land-based installations as well.

We appreciate the recognition of the important role wind energy will play in meeting America's future energy needs, which is reflected in the 60-percent increase in funding for the DOE Wind Energy Program that is included in the President's budget request. This funding increase is an important step in overcoming constraints to meeting the DOE's scenario of wind energy providing 20 percent of our Nation's electricity by 2030,[2] but funding should be increased in the three critical areas mentioned above, and maintained for wind resource characterization.

IMPORTANCE OF THE DEPARTMENT OF ENERGY'S WIND ENERGY PROGRAM

For years, the DOE Wind Energy Program has provided important help to the wind industry by supporting technology advances and identifying and addressing other hurdles to wind energy development. The program provides needed technical support, guidance, information, and limited cost-shared funding for efforts to explore and develop wind energy resources. AWEA commends the DOE Wind Energy Program for successfully developing programs that are consistent with the wind industry's long-term needs. We have noticed a growing rigor in the program's organization and structure to address the needs of the growing wind industry.

Past investments in wind have resulted in significant improvements over the past 30 years, such as increased output, improved reliability, and lower costs. In fact, the cost of wind, when adjusted for inflation, has dropped from more than $0.50/kWh in 1980 to between $0.05 and $0.06 today.[3] Despite this dramatic decrease, there is still plenty of room for further reductions that will be critical for wind energy to compete in an environment of very low electricity costs.

Clearly, more work is necessary. Wind power is still constrained by difficulties in market acceptance and the need for improvements in cost, performance, and reliability. DOE's 20-percent wind energy by 2030 report assumes that capital costs must be reduced by 10 percent and that turbine efficiency must increase by 15 percent to reach the goal of providing 20 percent of our Nation's electricity from wind by 2030. The DOE report identifies a need for continued Federal investment in wind RD&D by stating, "In a functional sense, wind turbines now stand roughly where the U.S. automotive fleet stood in 1940".[4] As our Nation turns to wind power to meet more of its energy needs, it is important for DOE to increase funding to improve wind turbine reliability and reduce costs.

Achieving 20 percent of U.S. electric power from wind, with the critical help of RD&D, would:

—Create 500,000 jobs, generating more than $1 trillion in economic impact by 2030;
—Reduce natural gas demand by approximately 7 billion cubic feet/day—nearly one-half of the current consumption in the electric sector;
—Decrease natural gas prices by approximately 12 percent, saving consumers approximately $128 billion;
—Avoid 825 million tons of carbon dioxide emissions in the electric sector in 2030, equivalent to 25 percent of expected electric sector emissions; and
—Reduce cumulative water consumption in the electric sector by 17 percent in 2030 (one-third of which would come from the arid West).

[1] March 2010 survey by Neil Newhouse, Public Opinion Strategies; Anna Bennett, Bennett, Petts & Norrington.
[2] U.S. Department of Energy, "20 Percent Wind Energy by 2030" (July 2008).
[3] Black and Veatch, "20 Percent Wind Energy Penetration in the United States" (October 2007).
[4] U.S. Department of Energy, "20 Percent Wind Energy by 2030" (July 2008).

The DOE Wind Energy Program currently receives approximately $79 million annually. In comparison, the RD&D budgets for many other traditional and emerging energy sources are much higher. Non-defense nuclear RD&D energy programs receive $775 million, coal programs receive about $383 million, and solar and biomass energy receive $243 million and $216 million, respectively. These are historic imbalances in funding that date back to the 1970s. A higher Federal funding level for wind energy RD&D will help ensure that wind energy remains competitive with other forms of energy.

SPECIFIC WIND INDUSTRY PRIORITIES

Each year AWEA and its member companies identify the RD&D priorities that will most effectively help realize the vision of providing 20 percent of America's electricity from wind by 2030. The following four areas are the wind industry's top priorities in addition to the funding that has already been requested in the President's budget.

Integration of Variable Power Resources

The integration of variable power sources, such as wind power, into the electrical grid is a key area of focus for meeting the 20 percent by 2030 wind energy goal. The systems integration program area focuses on the operations issues of integrating variable, nondispatchable power sources into the power system. Numerous studies from the United States and Europe (with significant involvement from DOE-funded experts) have shown that even minor changes to power system operations can accommodate much greater amounts of wind.

Unfortunately, the DOE budget request justification includes a reduction in funding for renewable systems interconnection from $14 to $3.9 million. The current funding level should be preserved.

Advanced Technology Components

Advanced technology components, from drive trains to blades to towers to controls and sensors, have enormous potential to drive down the cost and increase the reliability of all future wind turbine systems, not just those located offshore. Such advancements can be accelerated and stimulated by DOE, especially as industry deals with the current downturn in wind turbine installations. With continued and accelerated advancement, studies show that onshore wind turbine installations in the United States over the next decade can approach 150 gigawatts (enough to generate roughly 10 percent of U.S. electricity). The reduction in the utility-scale R&D testing budget line item indicates a reduced emphasis on these important technologies, which instead should be receiving greater attention.

Wind energy is now cost competitive with virtually every other energy source and technology advancements can drive the cost down even more. Already, these technology advances have enabled a typical modern wind turbine to produce 15 times more electricity than the typical turbine in 1990, but further improvements are needed to meet the 20-percent goal by 2030.

Siting Issues

The DOE 20-percent report also identified siting issues as a potential barrier to achieving that level of deployment. To address these issues, the wind energy industry invests millions of dollars every year in research related to the interactions between wind energy and wildlife, including through a variety of collaborative efforts involving Federal and State officials, as well as conservation organizations. However, given the importance of resolving siting issues, including wildlife-related concerns, to the future of the industry, it is necessary and appropriate for DOE to support such efforts as well. AWEA recommends devoting $1 million of the DOE R&D budget to supporting research on wind energy and wildlife interactions.

Wind Resource Characterization

Discrepancies between the projected and actual performance of wind facilities illustrate the urgent and continuing need for improved wind resource characterization methods (modeling and measurements). These methods include micrositing to reduce wind turbine wake losses and to optimize large wind farm array layouts. These key areas can be addressed in the short term to reduce the cost of energy. The DOE fiscal year 2012 budget justification includes an increase from $5.7 to $7.1 million for this area of research. AWEA endorses this funding increase.

CONCLUSION

The President and the Congress have called for a bolder commitment to the development of domestic energy resources to meet our Nation's growing energy demand.

Continued investments in wind energy RD&D are delivering value for taxpayers by fostering the development of a domestic energy source that strengthens our national security, provides rural economic development, spurs new high-tech jobs, and protects the environment.

While the wind industry continues adding new generation capacity, challenges still exist. Continued support for DOE's Wind Energy Program is vital to helping wind become a more prominent energy source, which will benefit the economy and environment. To ensure that funding levels are commensurate with our Nation's need for more domestic energy, AWEA urges the subcommittee to provide $144.2 million for the Wind Energy Program in fiscal year 2012. Along with other key Federal policies, both new and sustained, greater RD&D funding through DOE will help transform the 20-percent wind vision into a reality.

AWEA appreciates this opportunity to provide testimony on DOE's fiscal year 2012 Wind Energy Program budget before the Senate Appropriations Subcommittee on Energy and Water Development. We thank the subcommittee for its time and attention to our request.

PREPARED STATEMENT OF ANADARKO PETROLEUM CORPORATION

The President's fiscal year 2012 budget includes the elimination of funding for the Oil and Gas Research and Development Program at the Department of Energy (DOE), as well as a request for legislation to repeal section 999 of the Energy Policy Act of 2005, which has created a valuable public/private partnership to maximize the value of domestic energy resources.

At this time, when the security of foreign energy sources is questionable and the high price of imported energy is damaging the U.S. economy, responsible development of domestic resources is a winning proposition for the citizens of the United States. The United States has vast resources of clean natural gas locked in shale and other tight formations, as well as substantial gas and liquid reserves located offshore in waters too deep for economic production with current technology. Alternative (nonhydrocarbon) energy sources will not make a significant contribution to the Nation's energy supply for the next 10 to 20 years, so our Nation's energy security depends on our ability to develop the natural gas resources in a safe and environmentally responsible fashion.

The U.S. oil and gas industry is unparalleled in its ability to solve the tough engineering problems associated with oil and gas production in challenging environments around the world, but the economic development of domestic shale gas and other challenging resources requires the development of basic scientific knowledge and novel engineering concepts that are best accomplished in partnership between industry and the research establishment in the United States. The Oil and Gas Research and Development Program in DOE is a hallmark of such a partnership. For example, the program was crucial in bringing a resource such as coalbed methane from marginally economic status to the state of development where it makes a significant contribution to the Nation's gas supply, and attracts industry investment without Government subsidy.

The Nation needs this type of research and development investment in today's marginally economic resources in order to develop the technology that will attract tomorrow's industry investment and ensure secure domestic sources for critical energy needs in the near future. Now is definitely not the time to eliminate funding for the Oil and Gas Research and Development Program at DOE.

PREPARED STATEMENT OF BOB LAWRENCE & ASSOCIATES, INC.

Madam Chairman and members of the subcommittee: My name is Dr. Lloyd R. (Bob) Lawrence, Jr., and I am president of Bob Lawrence & Associates, Inc., a consulting firm in Alexandria, Virginia. I appreciate the opportunity to come before you today to discuss a key infrastructure problem facing our Nation, our electric grid; and a key solution, Advanced Conductor Technology. Specifically, I wish to discuss two key technological solutions for major grid problems, one solution being composite conductor technology, and the second solution being High Temperature Superconductor technology. During the past 7 or 8 years, these two technologies, together, have been funded at an annual level of about $25 million. For reasons that are not clearly explained or understood, the fiscal year 2012 request suggests zeroing out the promising technology advances in these areas. I am here to request that the subcommittee restore Advanced Conductor Technology to a reduced but needed level of $20 million.

As you are aware, the backbone of the grid consists of many thousands of miles of transmission lines, virtually all of which are based on steel core conductors, which are cables constructed with steel cores for strength, and wrapped with heavy, aluminum wires which carry the electric current. Much of the Nation's electric grid is 40 to 50 years old, and is in need of modernization and/or expansion to meet the growing electrical needs of the country, and the modern need for ultra high reliability to service our computer fleet and modern manufacturing processes.

The Congressional Budget Request for the Office of Electricity Delivery and Energy Reliability (OE) states that the request is "OE's leadership in developing 'next generation' electric grid technologies, tools, and techniques." Further, the request states that "today's electric grid was designed and constructed in the last century before cell phones, personal computers, and the Internet." And "society's changing needs have pushed an aging and sometimes congested grid to its operating limits." Finally, "A modern electric grid is critical to meeting the Nation's energy, environmental, and security goals."

The request states, unequivocally, that; "Without the development and deployment of 'next generation' electric transmission, distribution, and customer technologies, the grid could become a barrier to the adoption of cleaner energy supplies and more efficient demand-side measures."

All that being said, the OE request is for $237,717,000, none of which is for research and development on advanced conductors, the basic structure of the grid.

One solution which has shown extraordinary success, with additional promise, is the "composite core" technology. In this case, the steel core of conventional cable is replaced with a composite core providing for higher-temperature operation, with lower sag, and higher conductivity. The composite, itself, can be one of a number of different materials, individually chosen for its individual properties. The most successful to date, developed under a joint Department of Energy-Industry program is the Aluminum Matrix Technology composite core, also known as Aluminum Conductor Composite Reinforced. With a one-for-one replacement against conventional, steel core technology, the composite core has shown a doubling of electricity carrying capacity, with the same sized cable. This, then, allows for the doubling of capacity in critical transmission lines without needing any additional rights-of-way or additional tower structures. This provides huge environmental and permitting advantages, substantially lower cost of increased capacity, and a much shorter time from concept to operation. The producer of this modern grid option just celebrated the 1,000th mile of commercial production and installation of ACCR. Due to the substantial ratepayer benefits demonstrated to date, further research in the composite conductor area is a productive and logical path to follow.

A second solution, which will take additional time for broad entry into the electrical marketplace, is High Temperature Superconductivity, also known as HTS. Twenty years ago, laboratory scientists were ecstatic when a small, centimeter-squared wafer of HTS material could be shown to conduct electricity, without resistance, at the temperature of liquid helium. Today, according to the OE budget request, the technology has come to the point where HTS laboratories have "Demonstrated consistent production of second generation, High Temperature Superconductivity wire (greater than 300 meters long), with 70,000 ampere-meters critical current-length. Madam Chairman, I first worked on a Government grant in a University laboratory in the fall of 1964, nearly 47 years ago. I have been involved in Research and Development all my life. When you see a technology move forward, continuously, such as the HTS technology continues to move, it is not logical to cut it off and end its forward motion, when it promises such substantial benefits. Worst of all, you will lose the experience, knowledge, and corporate memories of the researchers and engineers who work on the technology, because they will be on to something else. You need to provide the funds to keep the present teams together.

HTS technology will have its first grid applications in high-capacity, underground transmission cables, Fault Current Limiters, and transformers. Additional benefits will come from the smaller "footprint" required to provide HTS substations. The first grid application is likely to be underneath our electrically congested cities, where HTS transmission and distribution cables can provide much higher electrical capacity in the same electrical conduits presently occupied by conventional technology.

In short, it is in the strong public interest to continue the Advanced Cables and Conductors program, addressing both composite technologies and high temperature superconductors, at a reduced level of $20 million for fiscal year 2012.

I thank you for your attention to this testimony.

PREPARED STATEMENT OF THE CENTER FOR ADVANCED SEPARATION TECHNOLOGIES

Honorable Chairwoman Feinstein, Ranking Member Alexander, and members of the subcommittee, I appreciate the opportunity to submit this testimony to your subcommittee on behalf of the Center for Advanced Separation Technologies (CAST). The center is a consortium of five universities with strong programs in energy and minerals resources. I and the representatives of the member universities participating in the consortium as listed—Richard A. Bajura—West Virginia University; Rick Q. Honaker—University of Kentucky; Peter H. Knudsen—Montana Tech of the University of Montana; and Jan D. Miller—University of Utah—are writing this testimony to request that your subcommittee appropriate research funding for advanced separations as part of the Fuels Program, Fossil Energy Research and Development, Department of Energy (DOE). The advanced separations research is mandated by the Energy Policy Act of 2005, title IX, subtitle F, section 962.

In 2010, the U.S. mining industry produced coal and mineral concentrates with a sales value of $107.5 billion at the mine mouth. These raw materials were used to produce approximately 50 percent of the Nation's electricity and various mineral materials worth $578 billion. According to the 2011 Mineral Commodity Summary published by the U.S. Geological Survey (USGS), the value-added mineral materials contributed $2.1 billion to the Nation's economy, which accounted for 14.4 percent of GDP. Further, some of the mineral materials produced by the U.S. mining industry are of strategic importance to the development of renewable energy resources and the defense industry. Despite the importance of the mining industry, there are no federally funded research and development (R&D) programs that help the industry to do better in meeting the environmental regulations and the national needs.

I would like to address two major issues the U.S. mining industry is facing today. One concerns with the coal industry complying with the Clean Water Act, and the other is developing domestic mineral resources to supply the rare earth elements (REE) for the energy and defense industries.

In 2009, the United States produced 1.07 billion tons of coal, with 55 percent of which produced in the Western United States and 45 percent in the East. The bulk of the mined coal in the East is washed in water to remove mineral matter impurities. Burning coal as mined incurs a high cost of shipping and produces large amounts of ash, SO_2, mercury, and other undesirable elements. Most of the mineral matter is removed at mine sites, and the efficiency of cleaning coal is high for the coarse coal, which is larger than approximately 0.15 mm in size. However, cleaning finer coal becomes more costly and difficult, causing some operators to discard the finer size fraction despite the fact that the fine coal refuse contains recoverable coal. Some companies recover part of the fine coal using the process known as flotation, while discarding ultrafine coal smaller than 0.044 mm in size. A recent congressionally directed study conducted by the National Research Council (NRC) showed that 70–90 million tons of fine refuse is being discarded to 713 active slurry and fresh water impoundments in the United States. Assuming that 30–40 million tons of the refuse is recoverable coal, the dollar value of the coal wasted in this manner is estimated to be $2–$2.6 billion per year.

A study conducted by DOE in the 1980s showed that approximately 2–2.5 billion tons of fine coal has been discarded over the years to numerous impoundments. The total amounts may be close to 4 billion tons by now as the coal industry continued to discard the ultrafine coal since the DOE report was written, and the coal production has also been steadily increasing. Assuming that roughly one-third of this amount is recoverable, the dollar value of the coal discarded in the existing impoundments may exceed $100 billion.

Some companies discard the fine coal slurry to underground mine workings, while others store it in large impoundments. There are several citizens groups in the Appalachian coal fields opposing to these practices by citing violation of the Clean Water Act. Some groups contend that the fine coal impoundments represent the worst form of valley-fill mining. To address these issues, the West Virginia legislature is debating legislation. If the legislature bans permits for new impoundments or mandates elimination of impoundments by law, the cost of producing coal would rise significantly and can adversely affect the Nation's economy.

A better alternative would be a technological solution. CAST has been developing advanced technologies that can be used to help companies eliminate the problem at the source, i.e., stop discarding fine coal to impoundments or injecting it into old underground workings, and further to recover the coal from existing impoundments. A series of advanced technologies has already been developed, which include the Microcel™ flotation column, dewatering aids, and hyperbaric centrifuge, all of which are marketed commercially under appropriate license agreements. The hyperbaric centrifuge was tested at pilot scale in 2009, and the successful test re-

sults have been reported in a DOE Fossil Energy Techline report on February 9, 2010. Encouraged by the test results, a first full-scale unit was tested successfully in February 2010, in Alabama, and the results have been reported in the Techline again on January 4, 2011. On the basis of the successful test results, the company has installed additional units for commercial use. It is believed that other companies will follow the suite.

The hyperbaric centrifuge described above is an advanced dewatering technology. It is useful for separating spent water from clean coal; however it is not designed to remove mineral matter from ultrafine coal. Therefore, CAST has been developing a new technology that can remove both mineral matter and water simultaneously, so that it can be used to recover coal from the fine coal refuse that has been deposited in impoundments. Laboratory experiments conducted on ultrafine refuse samples consisting of particles that are finer than 0.044 mm showed that this new process can be used to reduce the ash contents to 3–4 percent by weight and the moisture contents to 1–2 percent by weight, with 94–98-percent coal recoveries. An international patent application has been filed on the basis of the laboratory test results. It is necessary, however, that scale-up tests be conducted at 1–3 tons/hour capacity before the technology can be commercialized.

With the remaining pages of this testimony, I would like to address the needs for R&D funding to develop advanced separation technologies that can be used to recover minerals containing REE from domestic resources. China produced 55,000 metric tons of the rare earth oxides (REO) in 2009, which accounted for 97 percent of the world production. Recently, the Chinese Government announced that it would impose production and export quotas for the REO. This new policy created serious concerns in the United States and many other countries that have been relying on the Chinese export of the rare earths. As shown in the CRS report for the Congress (R41744), REEs are critical elements for the manufacture of the world's strongest permanent magnets, which are essential components of various military weapons systems such as precision-guided missiles, smart bombs, aircrafts, etc.

The United States used to be the world's largest producer of REE during 1960s and 1980s. Due to the high cost (mainly labor) of production, and the stringent environmental constraints, the production shifted gradually to China. However, the United States still has 13 billion metric tons of reserves. The major rare earth minerals in the United States are basinasite ($(Ce,La,Y)CO_3F$) and monazite ($(Ce,La,Y,Th)PO_4$) that are recovered by flotation. In China, the ores containing these minerals are in the range of 4–7 percent, which are increased to 50 to 70 percent by flotation. The basinasite and monazite concentrates are then treated chemically to extract different REOs and rare earth metals.

As is well known, REEs are not rare. In average, they are more abundant than copper and silver except that they do not occur in concentrated forms, making it difficult to mine economically. Further, the mineral grains are very small, usually smaller than 0.074 mm, which also contributes to the high costs of separation (or processing). In the United States, the mineable rare earth deposits are found in Mountain Pass, California; Bear Lodge, Wyoming; Diamond Creek, Idaho; Elk Creek, Nebraska; Lemhi Pass, Idaho-Montana; and also in South and North Carolina.

The key technology that is currently used to separate rare earth minerals from associated gangue minerals is flotation, which is also used for the separating mineral matter from coal and for the separation of one mineral from another in the mining industry. The Microcel™ flotation technology, which has been developed by CAST and is used commercially in the coal and base metals industries, can also be used for the separation of rare earth minerals. What is of critical importance in the flotation separation of these uncommon minerals is the control of surface chemistry of the minerals involved. If your subcommittee appropriates research and development funding for the fiscal year 2012, CAST can develop reagents that can facilitate the beneficiation of domestic rare earth mineral resources.

CAST has also developed a mathematical model for flotation in general. Unlike other models developed to date, it is based on first principles. Therefore, it has predictive and diagnostic capabilities. If funding becomes available, a model-based computer simulator will be developed for applications to the separation of rare earth minerals.

As noted above, CAST has developed a novel separation process for fine coal cleaning, in which both mineral matter and water can be separated simultaneously from coal. This process is more selective than flotation, particularly for the separation of fine particles. This process can be further developed to recover rare earth minerals.

CAST is a premiere research center for developing advanced separation technologies for the minerals and coal industries. Many of the technologies developed

at the center are commercially used in the industry. Some of the technologies developed more recently will be able to help the coal industry stop the practice of discarding fine coal to the environment and at the same time maximize the utilization of a valuable energy resource. Further, they can also be used to recover coal from the 4 billion tons of fine refuse that has been discarded in numerous impoundments and thereby create jobs. CAST also has acquired expertise to develop separation technologies that can be used to produce REE from domestic resources, so that the United States can continue developing renewable energy resources and secure the defense industry.

PREPARED STATEMENT OF THE COAL UTILIZATION RESEARCH COUNCIL

INTRODUCTION

This statement is submitted on behalf of the membership of the Coal Utilization Research Council (CURC), an organization of coal-using utilities, coal producers, equipment suppliers, universities and institutions of higher learning, and several State government entities interested and involved in the use of coal resources and the development of coal-based technologies.[1] Members of CURC have developed, together with the Electric Power Research Institute (EPRI), a Technology Roadmap that defines a research, development, and demonstration (RD&D) program that focuses upon the rapid development of cost-effective advanced coal and carbon capture and sequestration (CCS) technologies (www.coal.org) and the recommendations discussed in this testimony are keyed off this program.

IMPORTANCE OF THE DEPARTMENT'S FOSSIL ENERGY RESEARCH AND DEVELOPMENT PROGRAM

The President recently announced his intent to launch a program aimed at achieving domestic energy security by increasing the production of America's domestic energy resources, and by producing them in a manner consistent with responsible stewardship of the environment. In order to fuel our recovering economy and ensure jobs are created, coal must be a part of the President's program. In turn, the Department of Energy's (DOE) Fossil Energy RD&D program is fundamental to ensuring coal will play a vital role in our Nation's energy future.

The Department's coal RD&D program seeks to develop more efficient and cleaner advanced coal technologies, including technologies to capture and store CO_2 emissions from the use of coal. The Department's program has a proven track record of partnering with industry to overcome the challenges of using coal and controlling its emissions. The proof of this successful partnership is evidenced by the fact that since the inception of the Clean Air Act in 1970, the use of coal in this country has increased by more than 200 percent while the emissions of criteria pollutants has decreased by an average of 88 percent. This success is largely attributable to our Nation's continuing investments in the RD&D of clean-coal technologies.

Similarly, the actual tons of coal used in the United States are expected to increase over the next several decades. The challenge is to accompany these increases in coal use with the development of technologies to address environmental concerns at lower and lower overall costs. Successful technology investments will enable the Nation to continue to reap the economic and energy security benefits associated with use of our most abundant domestic fossil fuel resource in a manner that is respectful of the environment. It also means that the United States will retain technology leadership in the use of coal and this can mean exporting products, growing jobs, and assuring that developing economies that use coal will have access to technologies that assure a low carbon and overall environmental footprint.

COMMENTS ON SIGNIFICANT ISSUES RELATED TO THE FISCAL YEAR 2012 BUDGET REQUEST

The programs administered and supported through the Department's Fossil Energy office have been distinguished by efforts to foster partnerships with industry RD&D efforts, as well as a broad spectrum of university research organizations. These programs between industry, government, and the academic community have

---

[1] Several members of CURC are not-for-profit organizations designated as such for Federal tax law purposes. Such organizations are prohibited in whole or in part from undertaking advocacy activities with respect to Federal Government appropriations. This written statement could be construed as such an activity. Membership contributions made to CURC by these organizations are not used for these advocacy purposes; rather such contributions are utilized to undertake analyses and other educational activities as provided by CURC.

enabled participants to actively engage in each part of the technology development chain from basic research to applied research and development (R&D), and culminating in large-scale technology demonstrations and early commercial deployment. During the past several years, a principal focus of the DOE's coal R&D program has been the capture and storage of carbon dioxide. CURC members have participated in the DOE CCS related activity, and will continue to support that RD&D. However, the Nation faces additional energy and environmental challenges which would also be amenable to collaborative coal-related RD&D by Government and the private sector, and these challenges may be more immediate that the climate challenge. We recommend greater balance between support for CCS-related activities and other coal-related RD&D, as set forth below.

SPECIFIC RECOMMENDATIONS

The Energy Information Administration (EIA) projects that coal will continue to provide more than 40 percent of our Nation's electricity in 2035. And yet, despite the enormous contributions that the Department's Fossil Energy program has made to the development and successful commercialization of clean-coal technologies, the President's fiscal year 2012 budget recommends a 30-percent decrease in funding from fiscal year 2010 levels. Understanding the shared desire to constrain discretionary spending, we believe that it would be counterproductive to reduce Federal investment which results in lower-cost electricity and increased competitiveness of American goods. At a minimum, CURC recommends that the budget be maintained at the fiscal year 2010 level of $400 million for the coal R&D program, and that additional resources be appropriated to put us in a position to conduct second-generation technology demonstrations by 2016.

Department of Energy Proposal To Restructure the Coal Research, Development, and Demonstration Program

CURC believes that the proposed restructuring of the DOE coal RD&D program provides more transparency on the types of activities that are under the portfolio of each program area, and provides specific recommendations on those programs as proposed under the fiscal year 2012 budget restructuring:

Demonstrations

Clean Coal Power Initiative.—For the third consecutive year, the administration did not request funding for large-scale demonstrations of advanced coal technology on the basis of funding provided by the Recovery Act for Clean Coal Power Initiative (CCPI) Round III. As with other new and emerging technologies supported by the Department, support cannot be discontinued with this limited number of demonstration projects. A sustained and expanded demonstration program is integral to the commercialization of advanced coal and CCS technologies. In its proposed program plan, the Department suggests that CCPI Round IV must be initiated in 2016 if the programmatic goal of demonstrating second-generation technologies by 2020 is to be achieved. Incremental funding for the CCPI IV program must be provided in the fiscal year 2012 budget, and each year thereafter, in order to initiate a CCPI Round IV program in 2016.

FutureGen.—Funding for FutureGen has been made available through the Recovery Act. CURC reiterates its support for this project as an important and necessary step in the demonstration of an integrated CCS system. This type of government-supported project is vital to make CCS a commercial reality.

Power Systems Research and Development

Carbon Storage

CURC recommends an increase of $10 million more than the President's request for a total of $125.5 million. This increase corresponds with the funding recommended in the CURC–EPRI roadmap and will allow for the Phase III Regional Carbon Sequestration Partnership tests to proceed as planned, and will allow a reasonably robust set of projects to be selected in the current small-scale-test funding opportunity announcement. The program should emphasize beneficial use of carbon dioxide for hydrocarbon recovery to accelerate the development of the infrastructure needed to permit full-scale deployment of CCS in the future.

Advanced Energy Systems

Advanced Combustion Systems.—This program should support development of technologies that increase the efficiency of coal conversion to energy and contribute to reducing the costs of carbon capture from combustion-based power generation, for both new and existing steam powerplants. CURC recommends

that the budget be increased by $20 million (for a total of $30.7 million) in fiscal year 2012 as follows:

—Restore the materials budget for ultrasupercritical (USC) (high temperature and pressure) boilers/steam turbines back to $5 million. Without an increase, this program will be phased out and there will be no path forward toward a highly efficient, USC demonstration plant in the United States. Without DOE completing this program, the United States will lag behind India, China, and Japan on technology and competitiveness.

—Add $5 million for efficiency and heat rate improvements (beyond just higher-steam temperature conditions) for both existing and advanced plants. Efficiency improvements are a fundamental step toward zero emission power and contribute toward reduced conventional emissions, reduced CO_2 emissions, and lower cost CO_2 capture systems.

—Increase the Advanced Combustion Systems budget for oxy-firing systems by $10 million. The proposed fiscal year 2012 budget is well below the CURC–EPRI Roadmap and inadequate to fund both continuing oxy-fired projects plus a new funding opportunity that will focus on second-generation oxy-fired technologies.

Gasification Systems.[2]—DOE studies have shown that integrated gasification combined cycle (IGCC) with carbon capture has the potential to achieve a cost of electricity at parity with current new coal generation without CCS. Achieving this goal requires:

—technology improvements that reduce the parasitic losses of carbon capture;

—reduction of IGCC base cost through advanced modeling and construction techniques; and

—increasing gasifier availability to 90 percent.

The proposed fiscal year 2012 budget reduction will add years and uncertainty to the schedules for validation and commercial availability of currently identified improvements, and it does not provide funding for new solicitations needed to advance technology innovations. CURC recommends that the fiscal year 2012 gasification systems budget be increased by $26 million, for a funding total of $64.9 million, to support new RD&D opportunities that improve gasifier availability ($10 million); achieve major cost reductions ($10 million); and improve cost and performance for gasification-based coal conversion to chemicals and fuels ($6 million).

Advanced Turbines.—CURC recommends that the Advanced Turbine program be increased by $17.4 million for a total of $32 million. The Department has been partnering with industry to develop the latest generation of advanced gas turbines (the "G" and "H" class of turbines), but these turbines are not yet ready to meet the demands of IGCC plants with high levels of CO_2 capture. Reduced funding in the last few years has delayed progress and jeopardized DOE's goal of developing advanced turbines capable of improving the total efficiency of an IGCC plant by 5 percentage points by 2015. The proposed reductions to the turbine budget will lead to an even more significant delay in meeting the 2015 targets. These gas turbine technologies will be at risk of not being ready for the next CCPI demonstration program opportunity; thereby, extending the availability of critical technologies to help lower the cost of IGCC well into the next decade.

Fuels.—Although the President's budget proposes to cut this program, CURC recommends the addition of $20 million to continue coal conversion RD&D under the fuels program. In 2008, we spent $388 billion on imported petroleum products, or 57 percent of our balance-of-trade deficit. Production of liquid transportation fuels from 60-percent coal and 40-percent biomass could provide 3 million barrels per day of gasoline equivalent by 2020. This program would create new jobs through increased coal production, operating coal-to-liquid plants in widely dispersed geographic locations, and bolster our national, energy, and economic security through producing indigenous fuels. Coal plus biomass fuels meet the requirements of the Energy Policy Act of 2007 and have been shown to be net carbon sinks regarding carbon emissions. Funding should be directed toward simulation modeling and pilot plant testing on eastern, midcontent, and western coals, biomass characterization and feeding, and transformational research to reduce the energy penalty costs of conversion processes

[2] It is also important to note that advances in this area not only support advanced IGCC, but support all gasification programs in general, including industrial gasification, biomass gasification, hydrogen and fertilizer production, SNG, and coal-to-liquids programs and to these ends this program should encompass the concept of advanced gasification technology.

and plant capital costs which are currently a deterrent to implementation coal to liquids technologies.

Carbon Capture

Postcombustion Capture.—CURC agrees with the administration's request for fiscal year 2012 of $55.5 million for this program. However, funding should also target concepts at pilot scale as well as lab scale. In this program, DOE should also consider the development of technologies that capitalize on the use of hardware being installed or planned for other uses at existing facilities and that seek to co-benefit emission reductions that may achieve capture levels of less than 90 percent from flue gas streams. Technologies that have the ability to achieve incremental reductions at lower costs of electricity should be considered as part of the broader CCS goals of the DOE program.

Pre-Combustion Capture.—CURC agrees with the administration's request for fiscal year 2012 of $13.4 million for this program. Likewise for pre-combustion capture, funding should be robust and target concepts at pilot scale as well as lab-scale.

Cross-Cutting Research

CURC recommends that funding for the Cross-Cutting Research program be increased by $15.4 million (for a total of $54.15 million) to support the following activities that will develop the next generation of advanced coal plants:

—increase the budget for high-performance materials research from $0.973 to $5 million in order to support development of new high-temperature and pressure materials that will allow coal plants to generate electricity much more efficiently and, therefore, reduce overall emissions of both criteria pollutants and greenhouse gas emissions;

—increase funding for university coal research from $2.4 to $4.8 million to ensure there is a foundation for innovation with our university partners in developing advanced coal technologies; and

—provide $5 million in funding for a water management research program to develop technologies that reduce water consumption for powerplant cooling.

The new emphasis upon computational modeling in the DOE program is conceptually attractive as a means to evaluate different concepts that are being developed in the coal research program, and could be useful in moving those technologies from basic research into scalable component technologies. Modeling is also useful in directing attention to targeted areas where further engineering research is needed to solve operational problems. While modeling may be successful in reducing the amount of time and funding required to develop, demonstrate and deploy technology, modeling simply cannot replace practical applications and demonstrations of the technology. Members of CURC do not believe that modeling and simulation programs should serve as surrogates in lieu of demonstrations at any scale that provide real operating results. CURC is supportive of efforts to fund the development of computational models if the budget is robust enough to fund all of the priorities identified in this testimony, but CURC does not believe funding should be provided at the expense of funding other R&D and demonstration activities.

Title XVII Loan Guarantee Program

The DOE loan guarantee program is one of several important tools that act to reduce the large cost penalty associated with the installation of first-of-a-kind advanced coal systems with CCS. Other tools, such as the Department's CCPI demonstration program, as well as investment tax incentives and CO_2 sequestration credits, are also necessary and equally as important, as these financial assistance programs must in some cases be used in combination in order to bring down the cost of first of a kind projects and/or provide different value to different business models, and therefore some tools may be used over others for specific projects and entities. CURC recommends that additional authority for fossil energy projects be provided in the fiscal year 2012 budget to ensure this tool is available to support the deployment of new fossil-based projects.

PREPARED STATEMENT OF THE COLORADO OIL & GAS ASSOCIATION

The Colorado Oil & Gas Association (COGA) is submitting written testimony to express our concern with the President's fiscal year 2012 budget request to eliminate funding for the Department of Energy's (DOE) Oil and Gas Research and Development Program (R&D program). COGA is worried that defunding a program designed to ensure the United States is able to take full advantage of clean and abun-

dant domestic energy sources will curtail innovative technology, slow economic recovery, and increase our dependence on foreign energy sources.

COGA is a Colorado nonprofit corporation formed to foster and promote the beneficial, efficient, responsible and environmentally sound development, production, and use of Colorado oil and natural gas. Colorado's oil and gas industry contributes to the economic recovery by supporting more than 190,000 jobs for families and much-needed revenues for State and local governments while providing Americans with clean, safe, affordable, and abundant domestic energy sources. The ramifications of defunding the R&D program will be felt across the Nation, including Colorado which has recently had vast amounts of extractable resources become economical because of technological innovation.

Since the late 1970s the DOE has engaged in research and development for oil and gas, making valuable contributions to development of our vast domestic energy resources. DOE projects have achieved success in increasing exploration and production; addressing environmental protection through reduction of environmental impacts; and in the development of "game changing" technology such as fuel cells, gas turbines, and infrastructure improvements. Projects funded through the R&D program are essential to promote efficiency and responsibility in the extraction of our natural resources. Without adequate investment, domestic development of innovative technology will be hindered and further benefits go unrealized.

The market alone will not drive technological and environmental innovations in the oil and gas industry. While many of the "majors" (large companies with refining and marketing capabilities) engage in research and development, the reality is that 90 percent of all oil and gas wells are owned by independents (operations primarily dedicated to exploration and production). Although varied in size, the vast majority of independents do not have the resources to engage in research and development. Thus, without economic encouragement industry research and development is likely to yield lesser benefits.

Additionally, the R&D program is essential in promoting cleaner and more environmentally friendly ways to extract oil and gas resources. Many independents lack the resources to pursue these R&D endeavors, thus technology to mitigate potential environmental disturbances is unlikely to reach its full potential.

Increasing domestic oil and natural gas production will result in increased support for independent producers, less reliance on imported oil, and increased government revenues from royalties and taxes. We believe that our tremendous domestic oil and natural gas reserves provide a significant opportunity for the United States to reduce our dependence on foreign oil while reducing environmental impacts associated with energy development. But to do this, we need to work together in developing technology to ensure we have the energy to power our future. Thus, COGA respectfully urges the subcommittee to reconsider the proposed defunding of the DOE Oil and Gas Research and Development Program.

PREPARED STATEMENT OF CUMMINS INC.

Cummins Inc., headquartered in Columbus, Indiana, is a corporation of complementary business units that design, manufacture, distribute and service engines and related technologies, including fuel systems, controls, air handling, filtration, emission solutions, and electrical power-generation systems. The funding requests outlined below are critically important to Cummins' research and development efforts and would also represent a sound Federal investment toward a cleaner environment and improved energy efficiency for our Nation. We request that the subcommittee fund the programs as identified below.

OFFICE OF VEHICLE TECHNOLOGIES

Advanced Combustion Engine Research and Development.—Increase the request of $49 million by $20 million to bring the program total to $69 million in fiscal year 2012, $56 million was appropriated in fiscal year 2010. Two important areas of research included in the Advanced Combustion Engine research and development (R&D) are:

—the development of more energy-efficient technologies for diesel and gas engines, which will contribute to petroleum use reduction; and

—the development of robust engineering design tools for large-scale computational combustion analysis to develop cost-effective and -efficient combustion engines.

Light duty trucks continue to be a large segment of the surface transportation fleet. The Department of Energy launched the Advanced Power Train (APT) light duty (LD) initiative to reduce fuel consumption in this sector. The goal of the APT–LD program is to deliver cost-competitive technologies for a standard light duty

pickup truck which can achieve at least a 40-percent improvement in fuel economy over the state-of-the-art gasoline engines while meeting Tier 2 Bin 2 tailpipe emissions (the same emissions standard required for gasoline powered vehicles). Class 2a trucks consume nearly 3.9 million oil barrels/day of petroleum fuel. A fuel efficiency enhancement of 40 percent can reduce petroleum consumption by 1.5 million oil barrels/day. This enhancement will provide energy security by lowering petroleum imports, greenhouse gas (GHG) emissions and the trade deficit. Innovative high-risk technologies, such as low-temperature combustion, variable-valve actuation and closed-loop selective catalytic reduction controls are planned under this project. The funding increase will address significant technology hurdles in the areas of on-board diagnostics, parasitic loss reduction, after-treatment requirements, and the use of renewable fuels. Without the increased funding, research activities would be significantly limited. We understand the President's budget would provide $10 million in funding for the APT–LD program. We believe $15 million is needed in this area to adequately cover all R&D activities.

Advanced Computing, a large-scale computational simulation initiative, is targeted at achieving cost-effective means for even greater fuel efficiency; 60-percent thermal efficiency engines. Models will be developed for advanced chemical kinetics, computational fluid dynamics and large eddy simulations. These models will simulate advanced combustion regimes, transient events and cycle-to-cycle variability. Development of better solver algorithms will minimize cycle-to-cycle variations and more rapid optimization of overall engine.

These projects are in line with the administrations investment in clean-energy technologies to reduce dependence on foreign oil. We understand the Department of Energy (DOE) intends to allocate $15 million out of the Advanced Combustion Engine budget to fund Advanced Computing. We support this allocation. However, adequate funds do not exist with Advanced Combustion Engine to cover this activity. Therefore, we are requesting and additional $15 million in funding to cover these important activities.

OFFICE OF INDUSTRIAL TECHNOLOGIES PROGRAM

Industries of the Future (Crosscutting)/Next-Generation Manufacturing Processes, Combined Heat and Power Generation —Advanced Reciprocating Engine Systems.—The Combined Heat and Power (CHP) Generation budget line includes the important Advanced Reciprocating Engine Systems (ARES) program funded at approximately $10 million in fiscal year 2012. We request that ARES program funding be increased by $3 million to $13 million in fiscal year 2012. The ARES program is an important component of distributed generation and has applications in CHP. The objective of this industry cost-shared program is to develop high-efficiency, low-emissions, and cost-effective technologies for stationary engine systems (500–6,500 kW) that can use natural gas or domestic renewable resources "opportunity" fuels. Natural gas-fueled reciprocating engine powerplants are preferred for point-of-use power generation, low-operating costs, and reliability. Opportunity fuels can be renewable fuels (e.g., landfill gases) which exhibit low BTU, lower methane number, and varying gas composition. Their use reduces the dependence on high-quality pipeline natural gas. Technologies sponsored by the ARES program have demonstrated 47-percent engine efficiency (a 20–40-percent increase from the baseline engines), higher-power densities than current products, with an expected reduction in life-cycle costs and GHG emissions. Recent technology advances include advanced ignition systems, analytical tools for optimum combustion and prediction of onset of knock in a field test generator set. The funding increase in the fiscal year 2012 budget will support advanced technology challenges including combustion enhancements with low BTU and methane gases, nitrogen oxides (NO_X) reductions, advanced sensors and controls, hardware durability, and lower life-cycle costs. The development of distributed power generation supports national energy security needs, improves protection of critical infrastructure and decreases dependence on the national electrical grid system through point-of-use energy production.

INDUSTRIES OF THE FUTURE (CROSSCUTTING)/NEXT-GENERATION MANUFACTURING PROCESSES, COMBINED HEAT AND POWER

Support the Request of $25 Million in Fiscal Year 2012.—$24.7 million was appropriated in fiscal year 2010. This project is to develop a flexible CHP system which can be deployed in commercial and light industrial (100–500kW) applications at a lower total cost of ownership. CHP systems offer higher system energy efficiency, lower emissions, and economic benefits. Combined heat and power systems use an internal combustion engine to produce electricity at point-of-use and recover waste heat for heating or cooling purposes. Energy intensity of the CHP systems can be

reduced in excess of 35 percent due primarily to more efficient electrical generation and recovered waste heat. Modern engine designs operate with much lower regulated exhaust emissions and carbon dioxide. The fiscal year 2012 budget will support CHP performance modeling, cost-effective package design, remote modeling, and CHP system integration. The project will result in a system that is easy to use and inexpensive to install, while providing the lowest-emissions internal combustion natural gas engine for a CHP system of this size.

Advanced Combustion Engines—Health Impacts.—No funds were requested by the administration for this program. We request an increase of $2 million to bring the program total to $2 million in fiscal year 2012. The objective of this program is to expand the knowledge base relating to the heath implications of emissions technologies being developed to meet energy-efficiency goals. The Advanced Collaborative Emissions Study (ACES) is funded under this program. The ACES program is a cooperative effort between Government (DOE, Environmental Protection Agency) and industry (EMA, MECA, API) to assess health effects of emissions from 2010 compliant heavy-duty engines. The ACES program will include emissions characterization, chronic exposure animal bioassays, and identification of any unanticipated emissions or health effects from new engine technologies. Continuous monitoring of air toxins and source apportionment techniques are also proposed.

PREPARED STATEMENT OF THE DIESEL TECHNOLOGY FORUM

The Diesel Technology Forum (DTF) www.dieselforum.org is a not-for-profit organization representing diesel engine and equipment makers, fuel suppliers and emissions control technology companies. We appreciate the opportunity to submit comments regarding certain aspects of the fiscal year 2012 proposed budget of the U.S. Department of Energy (DOE), particularly its Vehicle Technologies Program (VTP) and its various budget activities for commercial vehicles, advanced combustion engine research and development (ACE R&D), fuels technology and materials research.

The fiscal year 2012 energy efficiency and renewable energy (EERE) budget proposes to substantially reduce investments in several key budget activity areas that impact heavy-duty diesel engines, commercial vehicles and truck efficiency programs. This includes ACE R&D (reduced 12.4 percent from fiscal year 2010 appropriated levels; $55.987 million to $49 million); a reduction of $5 million for fuels technologies; and reduction of $2–$3 million in materials technologies.

Because of well-established future need, proven past performance, and extended societal benefits, funding for Vehicle Technologies Programs including ACE R&D, fuels and materials technologies and SuperTruck activities has delivered proven benefits and must be restored.

The subcommittee faces a difficult task of setting priorities among many competing programs with limited resources. The subcommittee should seek to strike a better balance between fully funding programs that are known to improve efficiency of existing energy-intensive sectors on a near-term basis while at the same time supporting a reasonable vision and funding for infrastructure development, deployment and electrification of passenger vehicles; the potential energy-saving benefits of which may not be realized for several decades or more. We recognize that savings will need to be found across all programs but are concerned about the disproportionate impact on proven existing programs while unprecedented significant new resources are being requested elsewhere for new initiatives.

The commercial vehicle research activities have been cross-cutting in scope and shared risk and benefits between DOE, private industry, Department of Defense (DOD), Department of Transportation (DOT)and the Environmental Protection Agency (EPA). This suite of programs to make commercial vehicles more energy efficient—the 21st Century Truck Partnership and diesel engine and fuel research—have been among DOE EERE's most successful investments. They are proven to have helped meet important societal goals of economic growth and small business development (economics of more energy efficient commercial truck acquisition and ownership); cleaner air (reducing diesel engine emissions), reduced reliance on imported oil (increasing commercial truck energy efficiency). They have also enhanced our national security, through contributing to fuel savings of DOD military vehicles. Fuel accounts for 70 percent of the bulk tonnage transported to the battlefield and reducing consumption by 1 percent leads to 6,500 fewer soldier trips, which has

been identified with saving lives on the battlefield through reduced risk in transporting fuel.[1]

Existing Department of Energy Energy Efficiency and Renewable Energy Commercial Vehicle and Engine Programs Have Delivered Substantial and Proven Economic, Environmental and Energy Saving Benefits.—For every $1 invested, advanced combustion research delivered $53 in benefits. According to a May 2010 study[2] previous advanced combustion research for laser and optical diagnostics along with combustion modeling undertaken by the DOE and now having been implemented in commercial vehicles on the road today saved 17.6 billion gallons of diesel fuel over a 12-year period (1995–2007); a 4.5-percent savings in fuel consumption more than what would have occurred without the program investments. This translates into a monetized saving of $34.5 billion in 2008 dollars, and reduction of more than 177 million tons of CO_2 prevented.

The established goal of improving fuel economy by 20 percent for commercial vehicles in the ACE R&D has the potential to save more energy than the electrification of 1 million cars. Past investments have contributed to diesel engine manufacturers being able to meet the most stringent emissions standards on record, resulting in today's clean diesel technology with near zero emissions of ozone forming compounds (nitrogen oxides) and particulate matter. The total health and environmental benefits in terms of savings in air pollution and energy savings exceed $70 billion according to the previously referenced May 2010 study.

The Ongoing Need To Reduce Energy Consumption From Commercial Vehicles is Well Established.—Heavy-duty commercial trucks play the central role in the Nation's freight movement and goods delivery system, transporting 70 percent of the U.S. goods purchased. Diesel-power will be the primary technology of choice for providing this service in the foreseeable future due to its unmatched combination of efficiency, power, performance, reliability, and durability along with economical ownership and operation. Tractor-trailer type trucks (Class 8) use 80 percent of commercial trucking industry fuel. This accounts for 28 percent of total U.S. fuel usage. According to DOT, from 1970–2007, the number of trucks more than doubled while the mileage increased by 3.9 percent during the same period. Economic growth and recovery demands more trucking services, more miles traveled and more energy consumption. These past and predicted future trends underscore the need for continued gains in fuel efficiency benefits from continued future investments in commercial truck and diesel engine efficiency. Further, according to the Advanced Energy Outlook (Figure 2, below) with a 75-percent reduction in light-duty oil consumption; heavy-duty vehicles will make up the largest share of the consumption in the future. As global commodity, heavy-duty petroleum consumption already rivals that of light-duty vehicles. U.S.-developed fuel efficient technology for commercial vehicles through the EERE has had and will continue to have a global impact, adding much greater leverage on petroleum demand and cost on a global scale.

[1] Bochenek, Grace. "U.S. Army Tank Automotive Research Development and Engineering Center, 2010".

[2] Link, Albert N. "Retrospective Benefit-Cost Evaluation of U.S. DOE Vehicle Combustion Engine R&D Investments, Department of Economics, University of North Carolina at Greensboro"; May 2010.

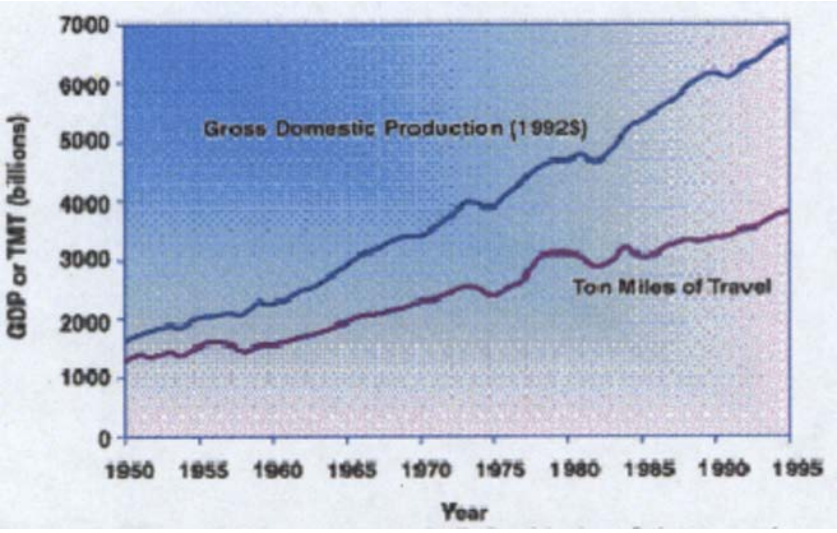


FIGURE 1. The Nation's economy is linked to truck transport. SOURCE.—Argonne National Laboratory.

Future Societal and Technological Challenges Facing Commercial Vehicles are Significant, and Heighten the Need for Continued, Robust Government Energy Efficiency and Renewable Energy Program Investments.—A landmark final rule from the EPA and DOT—National Highway Traffic Safety Administration (NHTSA) is expected in July 2011 that will establish the first-ever greenhouse gas emissions reduction requirements for commercial trucks. Goals for near and long-term reductions in greenhouse gas emissions and fuel efficiency improvement will be established at that time and will likely stretch the limits of currently known technology capabilities. The significant funding reductions in the suite of EERE commercial vehicle and engine programs in the fiscal year 2012 budget could delay or jeopardize gains in meeting these important societal goals.

u:\graphics\y2012\NDPDTS1.eps

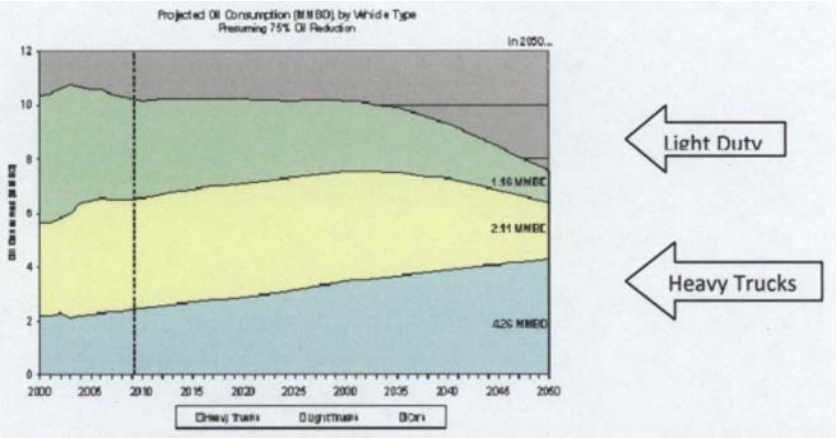


FIGURE 2. Internal DOE analysis, August 2008, comparing Heavy Truck oil consumption at AEO 2008 reference case levels with a 75% reduction in high-duty oil consumption relative to EIA's AEO 2008 reference case due to significant light-duty fuel economy gains and fuel switching. (p. 21)

Reaching these challenging goals will require substantial manufacturer investment in the next 3–5 years at a time when economic recovery and market potential for heavy duty commercial trucks remains tentative. More than ever, the combined collaborative approach of the DOE program of shared research toward common energy saving objectives is needed and necessary to assure continued progress and increase the speed of development, deployment of technologies, and societal benefits.

Fully Funding Commercial Vehicle Research Budgets Assures Continued Gains and Leverage of Ongoing Progress That Will Help Expedite Fuel-Saving Technology Development and Deployment While Managing Risks That Will Lead to Greater Future Fuel Savings.—Given the substantial progress made in the 21st century truck program, a framework of continuous progress has been developed over time that is a predictive indicator of potential future success. Adequate DOE program funding can assure that the commercial vehicle, engine and SuperTruck program goals of 50-percent increase in freight efficiency (ton-miles per gallon) will be more likely to be met. Truck and engine manufacturers face the unique challenge of competing societal demands of improved efficiency, near-zero emissions while meeting customer demands for lowest cost of operation. Significant investments in research are required but there are diminishing opportunities to recoup the substantial investments needed to meet these goals with only an average 200,000–250,000 heavy duty trucks sold annually. A fully funded SuperTruck program can assure these goals are more likely to be accomplished earlier than if companies alone shoulder larger research demands.

Commercial Vehicle, Engine and SuperTruck Efficiency Program Benefits Reach Beyond Private Industry in the United States, a Factor To Be Carefully Considered in the Final Decisionmaking.—Collateral benefits have accrued to the Department of Defense from the 21st Century Truck Partnership program through the efficiency advancements extending to military applications and a subsequent reduced dependence on petroleum. Continued funding of the vehicle technologies program, SuperTruck and ACE R&D will have long-term strategic value to reducing petroleum consumption of the U.S. military. The United States is the global leader in advanced clean diesel engines and efficiency gains here in the United States will ultimately impact the global marketplace.

CONCLUSIONS

There is an incontrovertible and established need to improve energy efficiency of the Nation's commercial vehicles. Commercial diesel-powered trucks are the backbone of the U.S. economy and the prime movers of the Nation's goods movement system, and will be for the foreseeable future. Fuel consumption in this sector is projected to continue to grow with the economy. Past EERE engine and vehicle effi-

u:\graphics\y2012\ndpdts2.eps

ciency programs have delivered substantial and well-documented economic, energy and environmental benefits to society. However the continued progress of these efforts is in jeopardy due to an imbalanced fiscal year 2012 budget request.

An adequate Government funding stream for the suite of vehicle technology programs like SuperTruck and the ACE R&D, fuels technologies and materials must be restored to fiscal year 2010 levels to assure continued progress and accelerate development and deployment of energy-saving technologies. Proposed reductions to the fiscal year 2012 EERE funding will jeopardize continued progress at an especially critical time as the industry moves to meet new greenhouse gas emissions and fuel efficiency goals, near zero emissions levels along with competing customer demands with the backdrop of a weakened and recovering economy.

A national energy strategy should seek to balance investments in near-term and long-term energy-saving strategies. Proven incremental gains in efficiency from existing fuels and technologies, particularly in sectors that use the most energy today without viable alternatives for the future must be a cornerstone of the national energy program and funded accordingly. While battery development and electric-powered vehicles may hold great promise, so too should investments in programs with assured near-term efficiency gains.

The diesel engine is the prime mover of America's transportation, infrastructure and goods movement today and for the foreseeable future. Now near zero emissions and still as the most energy efficient internal combustion engine (30-percent more efficient than gasoline), clean diesel technology has made great progress and has substantial future potential efficiency gains to meet future societal goals.

We appreciate the opportunity to file these comments. An ongoing dialogue with the subcommittee on making best use of limited dollars to achieve shared goals of greater energy efficiency while preserving a major economic force for the U.S. economy is essential.

PREPARED STATEMENT OF DR. STEVEN BRYANT

Defining priorities for Federal research funding is all the more important when reductions in overall Federal spending are being discussed. One such priority is the small but impactful Strategic Center for Natural Gas and Oil within the National Energy Technology Laboratory in the Department of Energy.

The U.S. economy runs on fossil fuel, including 20 million barrels per day of crude oil, the greater part of which is imported. But 30 billion barrels of this essential resource can be extracted from domestic reservoirs if improved technology for injecting CO_2 into these reservoirs can be developed. The Strategic Center for Natural Gas and Oil has established a visionary program for just this purpose.

Continuation of this program is important for three compelling reasons:

—Recent advances in science and technology outside the oil industry—including nanotechnology, novel synthetic chemistry, and efficient computational methods—have opened up truly new possibilities for substantially increasing recovery of oil by injecting carbon dioxide. The Strategic Center for Natural Gas and Oil has committed to exploiting these possibilities.

—Independents and small operators, not the majors, are conducting essentially all the carbon dioxide injection for oil recovery in the United States. This segment of the oil and gas industry is eager to take advantage of new technology. But these operators do not have the wherewithal to conduct basic research needed to implement new ideas from outside the industry.

—Federal funding is a critical mechanism for training the next generation of engineers and scientists who will implement these advanced technologies, working for domestic companies operating domestic oil fields—very good jobs that are a boon to local and regional economies.

In view of the often strident discussion of budget priorities in Washington and the rest of the country, it seems timely to remind members of the subcommittee that over the last 60 years the United States has a proud history of investing in basic research at its universities. That investment has been repaid countless times over. Practitioners educated in this way have contributed to a decades-long stream of technical innovation which has maintained U.S. leadership of the global economy. CEOs from all business sectors are unanimous on this point: Without continued innovation, the U.S. economic leadership will surely falter.

Many Federal programs have worthy justifications for their continued existence. But few can offer as large a return on the Federal investment as this one in the Strategic Center for Natural Gas and Oil. Even fewer provide that return in an area of unquestionably vital importance to the U.S. economy and national interest: the continued supply of domestically produced oil.

PREPARED STATEMENT OF THE EDISON ELECTRIC INSTITUTE

The Edison Electric Institute (EEI) respectfully submits this written testimony for the record to the Senate Appropriations Subcommittee on Energy and Water Development.

EEI is the association of U.S. shareholder-owned electric companies. Our members serve 95 percent of ultimate electricity customers in the shareholder-owned segment of the industry and represent approximately 70 percent of the U.S. electric power industry.

EEI appreciates this opportunity to share our views on some of the Department of Energy's (DOE) programs for the fiscal year 2012. We believe a robust national energy policy that supports the full portfolio of energy resources is critical to our country's national security and economic growth. Therefore, we respectfully ask the subcommittee to direct sufficient resources toward these critically important activities.

ELECTRIC TRANSPORTATION

EEI embraces the goal of having 1 million electric vehicles on the road by 2015. The United States faces numerous energy policy challenges, but perhaps none looms larger than energy security. Ongoing conflict in the Middle East and increasing demand as nations' economies recover have left crude oil prices hovering around $110 per barrel. U.S. drivers are now paying an average of $3.73 per gallon of gas, a 65-percent increase in 4 months. We strongly support increasing domestic oil supply. Turning to electricity as a transportation fuel is critical, too.

The transformation of the Nation's transportation fleet to one fueled in part by domestically produced electricity can gradually help reduce our dependence on foreign energy sources. Plug-in electric vehicles (PEVs) are being rolled out in major U.S. markets, as automobile manufacturers join utilities in embracing electricity as an important transportation fuel.

The job creation potential behind electric transportation is enormous. As the Nation transitions to a new era of electric transportation, demand for jobs in this new technology sector will continue to increase. From manufacturing batteries to building the necessary electricity recharging stations, PEVs will create high-quality employment opportunities throughout the country. The Federal Government estimates that tens of thousands of American jobs will be created to manufacture PEV batteries and components.

The Congress has a significant role to play in securing a place for electric vehicles in the transportation fleet. Federal funding is crucial to help break down market barriers to the commercial-scale deployment of electric vehicles and related infrastructure. Accordingly, EEI supports funding for DOE's PEV vehicle technology programming, including battery and electric drive technology development and grants to communities for the installation of PEV recharging infrastructure.

FOSSIL ENERGY

Coal generates almost 45 percent of our electricity and will continue to be an important fuel source for our Nation's electricity mix. Coal is the largest domestically produced source of energy in the United States.

EEI urges strong support for carbon capture and storage (CCS) and advanced coal technology programs, including loan guarantee authority for advanced fossil projects. CCS is a promising and important technology that will allow continued utilization of our abundant domestic coal reserves to generate a reliable and affordable supply of electricity in a cleaner manner. CCS commercialization is still in the future, but demonstration technologies hold great promise, and we are working with the Congress and the administration to develop policies that will accelerate its commercial availability and deployment.

NUCLEAR ENERGY

EEI urges support for DOE's nuclear loan guarantee program and recommends approval of the additional $36 billion requested in loan volume for nuclear energy projects. Nuclear powerplants generate about 20 percent of the industry's electricity and are the largest source of carbon-free electricity production in the country.

SMART GRID

EEI supports robust funding for smart grid programs. In addition to operational benefits such as automatic outage detection and automated meter reading, customers with smart meters receive other types of benefits, including easier energy management and the potential of the electric grid to act as a platform for future

energy technologies, including plug-in electric vehicles and distributed generation. Currently, electric utilities install between 15,000 and 20,000 smart meters every day. By 2019, it is estimated that more than 58 million smart meters will be in use in more than one-half of all U.S. households.

Deployment of smart grid technology means job creation across the economy. Researchers at the Milken Institute point out that smart grid construction requires highly skilled labor from various architectural and engineering occupations. Because smart grid investments have a significant economic impact, technology deployment would revitalize employment in research and development and in construction, where more that 1.3 million jobs were lost from 2007 to 2009.

CYBER SECURITY AND PHYSICAL INFRASTRUCTURE RELIABILITY

Protecting the Nation's electric grid and ensuring a reliable, affordable supply of power are EEI's member companies' top priorities. Indeed, system reliability requirements are what set electric utilities apart from most other industries. Utilities have an obligation to serve, to maintain exceptional reliability, and to keep their systems secure in an era of increasing cyber threats.

The electric power industry is constantly making investments to strengthen and improve the operations and security of its cyber systems and to identify and address vulnerabilities. One research organization has projected that global spending on utility cyber security will top $21 billion over the next 5 years. Industry in the United States, however, cannot go it alone. We urge the Congress to continue public-private partnerships to help ensure a robust and resilient electric grid.

TRANSMISSION, SITING, AND PERMITTING

Siting new transmission is critical for electric companies to be able to move power to where it is needed, to maintain a reliable electricity system, and to expand access to renewable energy resources.

In 2009, shareholder-owned electric utilities and stand-alone transmission companies invested an unprecedented $9.3 billion in our Nation's transmission infrastructure. This represents a 9-percent increase more than 2008 levels and an 82-percent increase more than 2000 investment levels. Since the beginning of 2000, industry has invested $68 billion in transmission. We anticipate at least $56 billion in transmission system investments through 2020.

The siting of new transmission lines, however, remains a difficult and lengthy endeavor, particularly where multiple States or regions must approve the project, or when the siting involves Federal lands. Sufficient funding to ensure timely coordination between Federal agencies and prompt issuance of Federal authorizations and permits is essential for a robust transmission system.

ENERGY EFFICIENCY

Utility spending on energy efficiency continues to increase. Over the past 3 years, electric utilities doubled their budgets for energy efficiency, growing from $2.7 billion annually to $5.4 billion. Utility efficiency budgets are expected to reach or exceed $12 billion by 2020.

As in the past, EEI recommends that Federal funding be used for the development and deployment of efficient energy technologies to help meet electricity demand growth, while enabling consumers to manage their energy usage.

RENEWABLE ENERGY

EEI supports funding for renewable energy research and development to help make these resources cost-competitive. The Energy Information Administration projects that renewable energy resources will continue to increase their share of the Nation's generation mix—from 11 percent in 2009 to 14 percent in 2035. Twenty-nine States and the District of Columbia have renewable portfolio standards.

ENERGY STORAGE AND BATTERIES

Improved energy storage is critical for enabling the widespread use of electric vehicles, efficient, and reliable smart electric grid technologies, and variable renewable energy resources. EEI supports Federal initiatives to advance and accelerate storage/battery technologies.

PREPARED STATEMENT OF THE ELECTRIC DRIVE TRANSPORTATION ASSOCIATION

The Electric Drive Transportation Association is the cross-industry trade association promoting the advancement of electric drive technology and electrified transportation and we are writing regarding the fiscal year 2012 request for the Department of Energy's (DOE) Vehicle Technologies and other electric drive programs.

Our members include vehicle manufacturers, battery and component manufacturers, utilities and energy companies, and smart grid and charging infrastructure developers. We are committed to realizing the economic, national security, and environmental benefits of displacing oil with battery electric, hybrid, plug-in hybrid, and fuel cell vehicles.

Electric drive vehicles, from mild hybrids to full electrics are being introduced into the market place in passenger cars; commercial trucks, neighborhood electric vehicles, buses; tractors and ground support equipment and are poised to advance to commercial scale. As the uncertainties roiling the global oil market are spiking the cost of gasoline as well as consumer goods in the United States, it is more important than ever to push forward in our concerted efforts to increase electrification and reduce dependence on imported energy.

DOE, working with the electric drive industry and other stakeholders, is helping to accelerate technology breakthroughs, promoting investment in manufacturing capacity and speeding deployment of electric drive vehicles and infrastructure.

The Department's Vehicle Technologies program promotes government/industry partnerships and leverages private sector investments to accelerate technologies that serve our national energy goals. Specifically, we support the Department's efforts to advance energy storage technologies and the administration's request for the Batteries and Electric Drive Technology program, which will develop next-generation battery technologies that increase performance and bring down costs. We further support the proposed level for Vehicle and Systems Simulation and Testing programs, including the Advanced Vehicle Testing Activity (AVTA), which are advancing next-generation charging, systems integration and codes and standard for vehicle to grid communication.

The Vehicle Technologies program is also home to important work in reducing the cost and expanding the abilities of medium- and heavy-duty electric drive trucks. Recognizing their enormous potential to transform the commercial fleet and reduce oil consumption in that transportation segment, we ask that the subcommittee direct sufficient resources toward program activities that advance electrification of medium and heavy duty vehicles, including work with industry partners to reduce component costs and further enhance performance.

Another key focus for DOE advanced vehicle technology efforts is fuel cell electric vehicles, which are important zero emission/zero petroleum options that will be integral to meeting national goals for energy security and reduced emissions. The industry is meeting aggressive cost, performance, and deployment milestones as it pushes toward commercialization in 2015. A meaningful partnership with the Federal research and development community through the Hydrogen Technologies Program is critical to keeping that timeframe.

We believe the fiscal year 2012 budget for Hydrogen should maintain the Department's commitment to hydrogen and fuel cell research, providing an expanded emphasis on programs that reinforce the vehicle commercialization effort. Specifically, we ask that funding for fuel cell electric vehicle and infrastructure deployment activities in Technology Validation and in early market development, including education and other enabling activities, be provided at levels sufficient to enable the industry to build on technology and market achievements to meet the 2015 target.

Finally, we strongly support the Vehicle Technologies Deployment programs, including Clean Cities' mission of advancing the Nation's and energy security by reinforcing communities' own efforts to expand deployment of electric drive vehicles (battery electric, hybrid and fuel cell electric vehicles), other alternative fuel vehicles and recharging/fueling infrastructure. We are pleased that Department's fiscal year 2012 budget requests an expansion of these partnerships and supports additional resources for communities deploying electric drive vehicles and recharging infrastructure.

Recognizing significant budgetary constraints that the subcommittee faces, we respectfully request that the subcommittee make the wise investment of resources in the DOE's electric drive programs that will enable the Department to continue to be an effective partner in accelerating the achievement of a secure and sustainable transportation sector.

We thank you for your consideration.

PREPARED STATEMENT OF THE ENERGY COMMITTEE OF ASME'S TECHNICAL COMMUNITIES

Mr. Chairman, ranking member, and members of the subcommittee: The Energy Committee (EnComm) of ASME's Technical Communities is pleased to provide this testimony on the fiscal year 2012 budget request for research and development (R&D) programs in the Department of Energy (DOE).

INTRODUCTION

The 125,000-member ASME is a nonprofit, worldwide educational and technical society. It conducts one of the world's largest technical publishing operations, holds more than 30 technical conferences and 200 professional development courses each year, and sets some 600 industrial and manufacturing standards, some of which have become de facto global technical standards. The Energy Committee of ASME's Technical Communities comprises 40 members from 17 Divisions of ASME, representing approximately 40,000 of ASME's members.

ASME has long advocated a balanced mix of energy supplies to meet the Nation's energy needs, including advanced clean coal, petroleum, nuclear, natural gas, waste to energy, biomass, solar, wind, and hydroelectric power. ASME also supports energy efficient building and transportation technologies, as well as transmission and distribution infrastructure sufficient to satisfy demand under reasonably foreseeable contingencies. Only such a portfolio will allow the United States to maintain its quality of life while addressing future environmental and security challenges. Sustained growth in the energy systems on which the United States depends will also require stability in licensing and permitting processes not only for power-generating stations but also for transmission and transportation systems.

A forward-looking energy policy will require enhanced and sustained levels of funding for R&D, as well as government policies that encourage deployment and commercialization. The Energy Committee supports much of the fiscal year 2012 budget request, especially the increases in funding for fundamental scientific research. The Energy Committee also wishes to emphasize that a balanced approach to our energy needs is critical, and this is why we remain concerned about the substantial decrease in funding for fossil energy, which is essential to meeting our national energy needs now and in the future.

FOSSIL ENERGY

The fiscal year 2012 budget request of $520.7 million for fossil energy represents a $206.7 million reduction compared to the fiscal year 2010 appropriation; a 44.5-percent decrease. Fossil Energy Research and Development (FE R&D) would be reduced by 31.3 percent, or $206 million to $452.9 million. The administration continues to point out that $3.4 billion was devoted to Fossil Research and Development as part of the American Recovery and Reinvestment Act (ARRA), and conceding this point, other offices, such as EERE and Science, also received funding in ARRA and are slated for substantial increases as part of the fiscal year 2012 budget.

Funding for Natural Gas Technologies and for Unconventional Fossil Energy Technologies would again be targeted for elimination by the administration. The United States has access to significant unconventional gas resources with the potential to provide abundant, affordable, clean low-carbon energy source for years to come. Prior FE R&D has contributed to making this possible. However, this potential will not be realized unless this resource can be produced reliably, economically, safely and with minimal environmental impact. Accomplishing this task and keeping the United States in the forefront of unconventional fossil energy technology will require an investment in basic research, technology development, and investments in advances in low-impact environmental technologies that will not be undertaken by industry in the current economic climate. The budget for these efforts should be maintained at least at the fiscal year 2010 level. The EnComm encourages a restoration of funding for coal research programs to at least the levels appropriated for fiscal year 2010. Coal remains a critical resource for our Nation and its economy; however, we must continue to invest in technological advancements that will reduce environmental impacts for this energy. The use of more efficient processes for coal combustion, such as advanced integrated gasification combined cycle (IGCC) technology, combined with carbon sequestration will allow the United States to utilize its coal resources in a more environmentally sound and cost-effective manner. We encourage strong and consistent funding for these programs now and in future years. The administration has also requested to zero out the section 999 program of the Energy Policy Act that is administered by the Research Partnership to Re-

store Energy for America (RPSEA), with oversight by FE-National Energy Technology Laboratory. This program funds unconventional natural gas research, a small producers program and ultra-deep water. This program addresses needed technology developments in safety and environmental protection. The EnComm strongly supports the continuation of this important program,

ADVANCED RESEARCH PROJECTS AGENCY-ENERGY

The EnComm supports the $550 million budget request for ARPA–E. ARPA–E represents a significant opportunity for the United States to cultivate technological breakthroughs related to energy sources and uses. A steady commitment to Advanced Research Projects Agency-Energy (ARPA–E) will encourage energy technology innovation and the committee believes that this is a worthwhile endeavor for the DOE as we seek to accomplish technological breakthroughs in energy technology.

NUCLEAR ENERGY

The EnComm is discouraged to see a slight reduction of $5 million in the fiscal year 2012 DOE Nuclear Energy budget request to $857 million more than the fiscal year 2010 appropriated amount. Although, this represents a minor budget reduction, particularly during sensitive budget negotiations, the EnComm is disappointed to see that no funding was requested for the creation of the Regaining our ENERGY Science and Engineering Edge (RE–ENERGYSE) program, which was requested for $5 million in fiscal year 2011. The Congress has not supported this program since it was first proposed in the fiscal year 2010 request and repackaged in the fiscal year 2011 proposal. Still, educating the next generation of nuclear engineers will be critical to the fulfillment of both the administration's Clean Energy Standard as well as national security. The EnComm is hopeful that the DOE will work to identify new opportunities for nuclear engineering scholarship.

Similarly, the Energy Committee is concerned about the plan by the administration for a discontinuation of the Generation IV Nuclear Energy Systems program. The Energy Committee is curious to see how the proposed Reactor Concepts research, development, and deployment program distinguishes itself from the traditional R&D program under the Office of Nuclear Energy. Nuclear energy, as a low-carbon, nongreenhouse gas-emitting resource, is a critical component of a diverse U.S. power generation mix and should play a larger role in the Nation's base power supply. Given the President's proposed national "clean-energy standard" of 80 percent by 2035 the EnComm believes very strongly that sustained increases in nuclear power research are justified.

ENERGY EFFICIENCY AND RENEWABLE ENERGY

EERE manages America's investments in research, development, and deployment of DOE's diverse energy efficiency and renewable energy applied science portfolio. The fiscal year 2012 request of $3.2 billion, $943 million more than the fiscal year 2010 appropriated amount of $2.21 billion, and provides a broad and balanced set of approaches to address the urgent energy and environmental challenges currently facing our Nation. Most of the key EERE programs, including Biomass, Solar, Wind, Geothermal, Building Technologies, Vehicle Technologies, and Industrial technologies, would receive substantial increases in funding to support the growth of renewable energy. The EnComm is particularly pleased to see large increases for both the Industrial Technologies Program (ITP), as well as the Building Technologies Program. ITP conducts energy assessments for energy-intensive factories to identify low-cost methods to improve their efficiency. The EnComm encourages the Congress to include waste-to-energy as an important component of the country's Renewable Energy portfolio to provide it with the same benefits as energy from biomass.

The EnComm believes that the development of transportation fuel systems that are not petroleum-based is a critical part of our future national energy policy. The fiscal year 2012 budget for biomass and bio-refinery systems R&D is slated to receive a $124 million increase to $340 million for fiscal year 2012, 57 percent more than the fiscal year 2010 appropriated amount. The Energy Committee supports the current appropriation and encourages the Congress to ensure that these research programs continue to receive adequate funding. We are also pleased to see the $273 million increase in the effort related to vehicle technologies emphasizing plug-in hybrid electric vehicles.

The integration of all cost-effective electric generating technologies into the operation of the electricity distribution system is critical to economic operation of the national electric grid. The EnComm believes that R&D related to the integration of the electric grid and its control as a truly national system is imperative for the

growth of effective and economic energy generation technologies and we encourage full funding for such research.

SCIENCE AND ADVANCED ENERGY RESEARCH PROGRAMS

The EnComm is pleased by the request for the Office of Science (OS) which restores the funding trajectory mandated in the America COMPETES Act of 2007 (Public Law 109–69). The fiscal year 2012 budget proposal of $5.4 billion is an increase of $452 million from the fiscal year 2010 appropriation. OS programs in high-energy physics, fusion energy sciences, biological and environmental research, basic energy sciences, and advanced scientific computing, serve, in some small way, every student in the country. These funds support not only research at the DOE laboratories, but also the work at a large number of universities and colleges. We believe that basic energy research will also improve U.S. energy security over the long term, through its support for R&D on cellulosic ethanol and other next-generation biofuels, advanced battery and energy storage systems, and fusion. The only program slated for a decrease in OS is Fusion Energy Sciences. The EnComm has some concerns about the recent delays for the International Thermonuclear Experimental Reactor (ITER) experiment being conducted in Cadarache, France. The EnComm would like to see ITER built by 2018, but in recognition that this is now unlikely; the EnComm will reserve further judgment until more information becomes available. The Energy Committee strongly supports the budget request for the Office of Science, as well as the proposed doubling track for the office by fiscal year 2017.

The Office of Science, in collaboration with ARPA–E, has announced the "Sunshot Initiative" to scale down the cost of solar energy by roughly 75 percent to $1 per watt of electric power, or about 6 cents per kilowatt hour of electricity. The program would cost $425 million to begin according to the administration's fiscal year 2012 budget request. The EnComm believes that this type of collaboration represents a good opportunity to leverage the technical resources available to both ARPA–E and the Office of Science. The EnComm would like to see the DOE make a strong effort to demonstrate the distinction between this project and similar types of research efforts, like the Energy Frontier Research Centers, and the Innovation Hubs to avoid redundancy.

OTHER DEPARTMENT OF ENERGY PROGRAMS

DOE is also very active in areas outside of R&D. The environmental remediation program that funds the decommissioning and decontamination of old DOE facilities is one such research area. The EnComm questions the advisability of flat funding for the Environmental Management program. The Yucca Mountain Waste Repository is a critical part of the environmental cleanup activity. Termination of this project, in the short term, will only extend and increase the final cost of the environmental management program. The EnComm does not support this backward step. The coming resurgence in the commercial nuclear arena is likely to deplete the trained professionals available for this program as engineers choose to move to the more stable commercial environment. The Congress should appropriate the funds to ensure that this work is accomplished in an expeditious manner.

CONCLUSION

Members of the EnComm consider the issues related to energy to be one of the most important issues facing our Nation. The need for a strong and coherent energy policy is apparent. We applaud the administration and the Congress for their understanding of the important role that scientific and engineering breakthroughs will play in meeting our energy challenges. In order to promote such innovation, strong support for energy research will be necessary across a broad range of technology options. DOE research can play a critical role in allowing the United States to use our current resources more effectively and to create more advanced energy technologies.

Thank you for the opportunity to offer testimony regarding both the R&D and other parts of the proposed budget for the DOE. The EnComm is pleased to respond to requests for additional information or perspectives on other aspects of our Nation's energy programs.

PREPARED STATEMENT OF THE ENERGY EFFICIENCY COALITION

We the undersigned represent a broad-based coalition of energy efficiency and environmental organizations, public interest organizations, and small and large businesses. We write today to ask your support for key energy efficiency programs with-

in the Department of Energy (DOE). These programs provide the foundation for the clean-energy investments that will ensure the long-term sustainability of the clean-energy economy.

Energy efficiency is our cheapest, fastest, and cleanest-energy resource and a necessary solution to address energy prices, energy security, air pollution, and global warming. Energy efficiency already is the equivalent of any of the Nation's other energy resources: since 1973, we save more energy each year from efficiency measures than we get from any single energy source, including oil. The following fiscal year 2012 funding recommendations build on past successes and provide additional support for provisions funded as part of American Recovery and Reinvestment Act.

In the months ahead it will be necessary for you to make difficult choices regarding budget priorities for the fiscal year 2012 budget. We believe that investments in programs that reduce costs for both individuals and businesses, and create greater economic prosperity and energy security for our Nation, should be maintained and in some instances enlarged. Energy efficiency programs are a source of savings that in turn are spent in other sectors of the economy, and it does not make sense to cut these programs, especially with our energy security imperiled by the turbulence in Libya and the Middle East.

Now is not the time to cut energy-efficiency programs and initiatives which help to protect Americans from volatile energy prices. Rather, we must increase investment in energy efficiency programs in order to meet our country's energy needs and safeguard our energy future.

We support the President's budget request for fiscal year 2012 for the Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy (EERE) and specifically for the following EERE programs:

—Building Technologies Program, including the Better Buildings Initiative ($470 million);
—Industrial Technologies Program ($319 million);
—Weatherization Assistance ($320 million);
—State Energy Program ($64 million); and
—Federal Energy Management Program ($33 million).

In addition to existing programs, it is important for America to maintain its competitive edge through continued research in new advanced energy efficiency technologies, such as the research undertaken by the DOE's ARPA–E program, for which the administration request is $550 million.

The budget for the 2012 fiscal year presents both a challenge and an opportunity. By fully deploying the power of energy efficiency, we can help drive the economic recovery we all long for. Increased investment in critical energy efficiency programs will help those American families and businesses who are struggling today to lower their energy costs. It will improve our Nation's energy security in these uncertain times. We strongly urge your support for the programs identified in this letter, and welcome the opportunity to brief you or your staff on the benefits these energy efficiency programs provide to consumers and businesses in America.

ENERGY EFFICIENCY COALITION

Alliance to Save Energy; American Council for an Energy-Efficient Economy; American Institute of Architects; American Public Power Association; Association of State Energy Research and Technology Transfer Institutions; Business Council for Sustainable Energy; Center for Environmental Innovation in Roofing; Citizens for Pennsylvania's Future (PennFuture); Copper Development Association; Danfoss; Direct Energy; Energy Future Coalition; Energy Platforms; Interfaith Power and Light; National Association for State Community Services Programs; National Association of Energy Service Companies; National Association of State Energy Officials; National Community Action Foundation; Natural Resources Defense Council; Polyisocyanurate Insulation Manufacturers Association; Rebuilding Together; Rinnai; Schneider Electric; Service Employees International Union; Sheet Metal and Air Conditioning Contractors National Association, Inc.; Sheet Metal Workers International Association; The Stella Group, Ltd.; U.S. Green Building Council; and United Technologies Corporation.

PREPARED STATEMENT OF THE EXECUTIVE COMMITTEE OF THE FERMI NATIONAL ACCELERATOR LABORATORY USERS ORGANIZATION

We are the Executive Committee of the Users Organization of the Fermi National Accelerator Laboratory (Fermilab) located outside of Chicago, Illinois, and represent the ~3000 user scientists of the premier U.S. laboratory for particle physics. Our membership includes researchers in high-energy physics (HEP) who study funda-

mental particles, astrophysics, and accelerators. Eight national laboratories are actively engaged in HEP research. These laboratories host facilities that are used by scientists from other national laboratories, from hundreds of U.S. universities, and from dozens of foreign institutions. Fermilab is the only one of the laboratories dedicated exclusively to the field.

The Department of Energy (DOE) Office of Science and the National Science Foundation supports HEP research at U.S. national laboratories and universities. More than 160 U.S. institutions in 43 States host physicists, astrophysicists, engineers, and accelerator scientists who work in HEP. More than one-half of these institutions are funded through the DOE Office of Science.

We urge the Senate to support sustained funding for fundamental science within DOE's Office of Science and the National Science Foundation. We request that the portfolio of funding for basic research be balanced. HEP research is a key part of these programs that yields valuable benefits to our Nation as described below. Our field is undergoing a transition with the Fermilab Tevatron accelerator program coming to a conclusion after an incredibly successful three decades. New programs are underway or just beginning that will provide the basis for vibrant, world-class research for the next several decades. This transition is a critical time for our field in the United States and requires sustained funding to maintain our leadership in HEP research.

VALUE OF HIGH-ENERGY PHYSICS RESEARCH

In our modern economy, science and technology (S&T) are driving forces of national strength as detailed in the National Academies report "Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future" and the 2010 update "Rising Above the Gathering Storm Revisited". Continued leadership in S&T fields is critical to our economic growth, national security, and world leadership. Innovation derived from a highly trained workforce is key.

Without new technological developments within the United States, our economy will not grow and other countries will surpass us. But the most revolutionary technologies often require revolutions in our fundamental knowledge and understanding, or are invented in the research struggle of our most talented minds in pursuit of measuring, understanding, and testing new ideas and concepts. No one could have predicted the nature of our current society from the first studies of the electron; however we would not be communicating via email, fax, or text messages without them.

HEP strives to understand the most fundamental aspects of nature. We can rarely predict the outcome, but the quest for knowledge has always led to numerous advances, some of which are listed below. Certain results are predictable: we will educate and train some of the best and brightest students who will contribute to our Nation in many different arenas.

VALUE OF TECHNOLOGY DEVELOPMENT

While the primary purpose of HEP research is not the creation or development of new technology, our work often requires it to accomplish our goals. Many of our experiments require technology that does not exist when the project is started. Therefore, many of our researchers spend a significant part of their careers advancing high-tech particle detectors, developing complex computing algorithms, and pushing the limits of high-speed electronics. Without continuous innovation we would not be able to complete our experiments. But once these advances are made they are applied by industry.

An example of this is the construction of the Fermilab Tevatron accelerator that reigned as the world's most powerful machine of its kind for nearly three decades. It required 1,000 superconducting magnets to be placed around a 4-mile ring. Creating superconducting magnets requires superconducting wire. At the start of the project in the 1970s, it was known how to make such wire, but the industry needed to make it did not exist. Fermilab researchers helped to build up that industry and advance their production techniques through a very successful joint government/business venture. Once the accelerator was complete in 1983, these businesses looked around to see what other projects could use superconducting wire. MRIs that are commonly used for medical imaging are an example. Because of the work of Fermilab, MRIs became much more widely available in the 1980s.

A current experiment being led by Fermilab scientists is the Dark Energy Survey (DES). This experiment requires a digital camera larger than any ever built. Their technological developments will eventually influence the digital cameras available at your local electronics store as well as devices no one has even dreamed of yet.

High-energy physicists have been the leaders in accelerator science since its beginning. Our work requires the most powerful particle accelerators that can be built. However, accelerators are now used in thousands of applications. More than 17,000 particle accelerators are used throughout the world, only a small fraction of these dedicated to HEP. Most are used by industry and for medical treatment. The tire industry, for example, now uses particle accelerators to treat their tires, which has resulted in a reduction of 3 pounds less rubber per tire and a reduction in the amount of chemicals needed in the production process. The industry is more efficient and better for our environment because of the application of particle accelerators. This success was unanticipated in the early days of accelerator development, but is certainly a positive result.

VALUE OF EDUCATION

The United States has long been the destination of choice for the best science students from around the world. Our universities provide an education that is second to none. Our national laboratories provide research opportunities that are unavailable elsewhere. Fermilab is an excellent example of this. Numerous students from foreign institutions travel to Fermilab to complete their research. Many of these students then choose to stay in the United States after completing their degrees.

Our students learn a variety of skills that are applicable in numerous fields. They learn how to work on problems where the answer is unknown and how to adapt to unforeseen challenges. They learn skills in computer programming, data analysis, simulation of complex problems, and electronics development, among others. They learn to work in teams and do collaborative projects. Most importantly, they learn how to take a project from start to finish, write a document detailing it, and present it to an audience. These skills are all highly desired by businesses.

Many of our students choose to continue their immediate careers as postdoctoral associates. This provides a postgraduate education that further develops their skills. Postdocs generally take on more complex projects and develop leadership and management skills. Most HEP experiments involve 20 to 2,000 scientists and face challenges that are similar to those in many businesses.

Scientists trained in HEP work in telecommunications, software development, aerospace, education, medicine, government, and finance, to name a few. Approximately one-fourth of our Ph.D. students enter new fields. Private businesses are the largest and most diverse employers of scientists trained in HEP. Several former HEP researchers have founded or led small and large companies, including Richard Wellner, chief scientist at Univa UD, a cloud management software company; Francisco Vaca, CEO of Vaca Capital Management LLC; George Coutrakon, director of operations at Loma Linda University Medical Center; and Homaira Akbair, CEO of SkyBitz, a satellite-based tracking company.

Our researchers are engaged in all levels of education and understand the importance of scientific literacy in our society. We use numerous venues to advance this. Hundreds or thousands of public lectures are given around the country each year. Our scientists visit local schools to share the excitement of science through physics demonstrations or presentations of their work. The QuarkNet program, funded through the National Science Foundation, trains K–12 teachers in 28 States in cutting-edge research so that they can take it back into the classroom. More than 38,000 students attend Fermilab education activities each year.

IMPACT OF BUDGET CUTS

Continued funding of science research is critical to our Nation. Severe budgetary cuts will have devastating effects that will be felt for decades. Science opportunities will be delayed or lost to other nations. Our reputation as the place to be for the best and brightest will be damaged. The administration's request for fiscal year 2012 maintains a funding level for science research that will allow us to avoid substantial damage.

Large cuts will have immediate impacts on our universities and national laboratories. Layoffs and/or furloughs will be unavoidable if we return to fiscal year 2008 funding levels. Several Fermilab projects that were slated to start construction in fiscal year 2011 have already been delayed. These projects are key to the near-term future of the laboratory and the U.S. HEP program.

However, the largest and longest-lasting impact will be in our training of the next generation of scientists. Severe cuts will force us to train fewer students. It will demoralize our current students and postdocs, and some will quit. And we will no longer attract the best students. It will take a long time to overcome even a short-term cut to funding. These young people will be the foundation on which our economic growth depends. Without the advanced training offered by fields such as

HEP, they will lack the skills to develop the next technology or the next new industry. Or they will be trained in other countries and that innovation will occur overseas. It is critical that we remain attractive to U.S. and foreign students now and in the future.

SUMMARY

Scientific research in general, and HEP in particular, provides value to our Nation that will be lost without continued funding from the U.S. Government. The knowledge that is gained will lead to future innovation that will continue our world leadership. The path to that knowledge will lead to advances in technology that will help sustain our economic recovery. And the education of students from the United States and abroad will provide the knowledgeable workforce that will carry us through the next half century.

It is critically important to maintain our leadership position in scientific research. The repercussions of severe cuts will be felt for a long time. We urge the Senate Appropriations Committee to support the President's request to maintain our scientific research program for the long-term health of the Nation.

PREPARED STATEMENT OF THE FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY

The Federation of American Societies for Experimental Biology (FASEB) respectfully requests an appropriation of $5.10 billion for the Department of Energy Office of Science (DOE SC) in fiscal year 2012. This figure is in keeping with President Obama's vision for strong national investment in innovation, and it would enable DOE SC to continue to support essential research programs that enhance human health and quality of life, invigorate the economy, bring the Nation closer to energy independence, and drive scientific advances.

As a Federation of 23 scientific societies, FASEB represents more than 100,000 life scientists and engineers, making it the largest coalition of biomedical research associations in the United States. FASEB's mission is to advance health and welfare by promoting progress and education in biological and biomedical sciences, including the research funded by DOE SC, through service to its member societies and collaborative advocacy. FASEB enhances the ability of scientists and engineers to improve—through their research—the health, well-being, and productivity of all people.

DOE SC provides more than 40 percent of the total funding for basic research in the physical sciences, including fundamental research in energy sciences, biological and environmental sciences, materials and chemical sciences, and computational science. In addition to supporting research at more than 300 colleges and universities, DOE SC funds and manages 10 world-class national laboratories.

The DOE SC national laboratories, located in eight States across the country, maintain essential research and development facilities containing sophisticated instrumentation such as particle accelerators, advanced light sources, and supercomputers. Because large-scale facilities provide infrastructure beyond the budget of any individual research institution, tens of thousands of university and industry scientists rely heavily on access to unique DOE SC instrumentation in order to conduct cutting-edge research. For example, xray facilities housed at DOE SC national laboratories, such as the Advanced Photon Source at Argonne National Laboratory, are used by nearly all U.S.-based pharmaceutical and biotechnology companies to conduct protein structure studies critical to the drug design process. Furthermore, the oil and gas industry uses DOE SC instrumentation to study the atomic structure of chemicals used to process and refine fossil fuels. Without strong and sustained support for DOE SC, operations at national laboratory facilities could be limited or terminated, forcing U.S. companies that depend on them to move their research studies to overseas locations providing better access to instrumentation.

At academic institutions and national laboratories across the country, DOE SC-funded scientists have uncovered a wealth of knowledge that has led to life-changing developments in energy, medicine, computer science, and other fields. For example, a team of DOE SC-funded scientists is studying a fungus capable of degrading plant material into the simple sugars necessary to make biofuels, possibly leading to a more economical means of manufacturing ethanol for industrial applications. DOE SC also partners with other Federal science agencies on projects requiring multidisciplinary resources and expertise. Along with the National Science Foundation and the National Eye Institute, DOE SC sponsored the research and development of an artificial retina to restore sight in patients blinded by eye diseases such as macular degeneration and retinitis pigmentosa. The study of artificial retina tech-

nology has advanced the general field of neural prostheses, which has the potential to improve the lives of people with spinal cord injuries, Parkinson's disease, deafness, and other neurological disorders.

Now is not the time to abandon investment in the innovative research supported by DOE SC. Insufficient funding for the agency would curtail groundbreaking scientific discoveries by forcing essential research facilities to close, causing thousands of scientific jobs to be lost, and deterring the next generation of scientists and engineers. A source of abundant, safe, clean, and sustainable energy is critical to the Nation's future. Development of new energy sources that can be used in place of fossil fuels will create new industries, reduce U.S. dependency on foreign oil, protect the environment, provide economic opportunities, and strengthen national security. Furthermore, because of the collaborative work of science agencies and the increasingly interdisciplinary nature of scientific research, support for the Federal research and development portfolio has never been more important. With its vital mission and unique research facilities, investment in DOE SC programs should be one of our highest national priorities.

Thank you for the opportunity to offer FASEB's support for DOE SC.

PREPARED STATEMENT OF THE FUEL CELL AND HYDROGEN ENERGY ASSOCIATION

On behalf of the members of the Fuel Cell and Hydrogen Energy Association, we are writing to urge your continued support for fuel cell and hydrogen energy programs for fiscal year 2012 Energy and Water Development appropriations. These critical programs create green jobs, increase the efficient use of our Nation's natural resources, reduce dependence on foreign oil and enhance energy security, while reducing criteria air pollutants and greenhouse gas emissions.

As the subcommittee develops the fiscal year 2012 Energy and Water Development appropriations bill, we urge you to support the fuel cell and hydrogen programs at the fiscal year 2010 levels of $174 million managed by the Energy Efficiency and Renewable Energy (EERE) and $50 million in Fossil Energy (FE) organizations at the Department of Energy (DOE). This amount would fully fund the critical research, development, demonstration and deployment of these technologies in order to gain a stronger foothold in current markets and move the others to commercialization in the near-term.

Fuel cell and hydrogen technologies produce jobs and are a crucial part of the portfolio of advanced energy technologies that will help achieve the Nation's oil and greenhouse gas (GHG) reduction goals. Fuel cells for stationary power and material handling equipment are commercially available and creating jobs today in domestic and export-oriented manufacturing. The United States is poised to introduce fuel cell electric vehicles by 2015, as long as there is continued support for technology maturation, supplier development and infrastructure deployment. Advanced R&D in FE and EERE, market transformation, technology validation, and hydrogen efficiencies in EERE are key components of the fuel cell budget.

The United States currently leads the world in fuel cell and hydrogen technologies. Japan, Germany, Korea, and China have made it a national priority to develop these technologies and attract the skills and intellectual property to create a domestic clean-energy business as a platform for a future export market. In the United States, fuel cell commercialization is underway, and businesses are making the necessary investments to bring fuel cell-powered products to American customers.

President Obama has set strong targets for the Nation for clean-energy generation and manufacturing; and for increasing the number of vehicles fueled by biofuels, natural gas, and powered by electric drive trains. Fuel cells and hydrogen energy can help America meet those goals faster, more efficiently, and with less impact on the environment. Fuel cells are always the cleanest way to use any fuel, whether renewable or fossil, and all fuel cell electric vehicles are hybrids, as they use batteries to store energy; moreover, there is no cleaner way to use natural gas as a transportation fuel than to reform it for use in a fuel cell electric vehicle.

What the industry needs now is help from DOE in leveraging these private dollars to help mature current markets and aid in creating a competitive landscape for budding ones. Realizing the budget constraints you are working under, a budget consistent with fiscal year 2010 levels will send a strong, positive signal to other investors, companies investing in fuel cell products, auto makers, supply chain partners, and potential customers. We need a robust market for fuel cells and hydrogen energy in the United States if we want to keep these industry jobs and the resulting economic growth here, as well.

Thank you for your consideration of our request.

STRENGTHEN FEDERAL HYDROGEN AND FUEL CELL PROGRAMS

Proposal.—Fund DOE fuel cell programs at a Congress-approved level for fiscal year 2010; restore reductions proposed by the administration for fiscal year 2012.

DOE's Office of Fuel Cell Technologies, Fuel Cell and Infrastructure Technologies Program supports the development of fuel cells, hydrogen fuel and supporting infrastructure for power generation, backup power, industrial vehicles, portable applications, and passenger cars. The program has made exceptional progress in a few short years, helping to reduce the cost of fuel cells by 45 percent since 2007 and the cost of hydrogen produced from renewable sources and natural gas by 40 percent. The program has tested and evaluated 160 fuel cell vehicles in real-world operation, led the development of safety codes and product standards, and helped deploy more than 1,000 fuel cell systems to Federal agencies and early private sector customers where they are improving energy efficiency and security of supply with low or zero emissions.

The United States is the recognized world leader in fuel cell technology. DOE research has supported more than 200 patents. But the full benefits of commercialization, including, by DOE's estimate, up to 677,000 jobs in the next 25 years, will go where the Government policies and public-private partnerships are strongest. Germany, South Korea, Japan, and China, among others, are implementing long-term programs designed to capture the fuel cell lead and reap the economic and energy security benefits that will follow. The Obama administration's proposal to reduce fuel cell funding would send just the opposite signal to our domestic market, and have long-term undesirable consequences.

Fuel cell technologies are a crucial part of the new energy network that is needed to achieve the Nation's energy policy and greenhouse gas reduction goals. DOE estimates fuel cells can reduce oil imports by nearly 8 billion barrels over the next 40 years, reduce CO_2 emissions by 2.4 billion tons, and save consumers $1.6 trillion. A robust public-private partnership focused on cost reduction and early deployment will accelerate commercialization and the benefits that accrue with marketplace success.

Office of Energy Efficiency and Renewable Energy Programs—$174 Million

Vehicles and Infrastructure.—Support for deployment and fueling infrastructure, backed by testing and evaluation, is essential to accelerating the transition to the marketplace. As its Phase I Technology Validation program winds down, DOE should evolve to support early volumes of commercial Fuel Cell Electric Vehicles and related infrastructure.

Market Transformation.—The Market Transformation Program provides technical and financial support for purchase or lease of fuel cell systems entering the marketplace. The program creates U.S. jobs, improves security of air travel and communications, and enables a commercial transition in early markets by driving down costs through economies of scale. DOE should continue Market Transformation activities in all market sectors.

Enabling Activities.—These programs prepare local communities for fuel cell installations, fueling stations and vehicles, and help DOE evaluate program options. Systems analysis, safety, codes and standards, education, and manufacturing technology programs all contribute to commercialization.

Research and Development.—DOE's robust program of cost reduction via research into materials, catalysts, and components should continue. Hydrogen is one of a portfolio of fuels that together will achieve U.S. energy security while meeting greenhouse gas reduction goals. Improved hydrogen storage will reduce vehicle cost and improve capability, and will enable efficient use of hydrogen as a storage strategy for intermittent renewable resources, such as wind and solar power. Hydrogen from biomass uses a renewable domestic energy source and provides greater greenhouse gas reductions than biofuel combustion.

Office of Fossil Energy: Solid State Conversion Alliance Program—$50 Million

Solid State Energy Conversion Alliance (SECA) is a cost-shared public-private partnership developing high-temperature solid oxide fuel cells (SOFCs) for stationary power generation that has met or exceeded every benchmark set for it by the Congress and the DOE in its more than 10 years of existence. Industry has spent $3 for every $1 of Government funds, and decreased the cost of SOFCs tenfold, while increasing their efficiency and durability by 2 to 3 times. Continued support is needed to scale-up the technology to central power station levels. The United States lead in SOFCs, and has created commercially viable distributed power generation using natural gas, biogas, and landfill gas that emits zero criteria pollutants at a low-GHG intensity. Continued development and commercialization of SECA

technology will deliver a significant return to the U.S. economy. Walking away now would hand the fruits of our investments to our foreign competitors.

PREPARED STATEMENT OF THE GAS TECHNOLOGY INSTITUTE

Gas Technology Institute (GTI) welcomes the opportunity to provide comments to the Appropriations Subcommittee on Energy and Water Development.

GTI is an independent not-for-profit organization serving research, development, and training needs of the natural gas industry, gas consumers, and energy markets. Most of the 250-person GTI staff is based at GTI's headquarters located on an 18-acre campus in Des Plaines, Illinois. More than 70 percent of our personnel are technically trained engineers and scientists. GTI has more than 280,000 square feet of office, laboratory, shop, library, and training space with more than 110,000 square feet devoted to laboratory, fabrication and testing facilities. GTI currently manages approximately $60 million in research and development contracts per year (more than 100 projects), and has been managing contracts of this type since the 1940s. GTI performs contract Research and Development (R&D) for the Department of Energy (DOE) and is very familiar with many of its programs.

NATURAL GAS

New opportunities for the production of natural gas in the United States will provide a jobs and economic boom to many parts of our Nation over the next 10 years. In the last year alone Pennsylvania has created 44,000 new jobs and their residents have received more than $389 million in lease payments from private companies for the right to explore natural gas trapped in shale formations. By 2020, 211,000 new jobs are expected to be created in Pennsylvania and lease payments more than $1.9 billion [1] to be paid.

To assist in accomplishing the goals of energy independence, reducing emissions and creating hundreds of thousands of new jobs, the Congress and executive branch should provide similar attention and resources to the development and deployment of natural gas technologies as are provided to other energy sources. Today, the DOE spends billions of R&D dollars on wind, solar, coal, and more-efficient electric technologies. These are all important efforts, however, when reviewing the agency's entire R&D budget, less than 1 percent is spent on natural gas R&D even though natural gas represents 25 percent of our Nation's primary energy use and that is expected to grow over the next several decades and natural gas provides compelling public benefits in terms of domestic economic growth, improved energy security, source energy efficiency, and reduced carbon dioxide emissions.

DEPARTMENT OF ENERGY'S RESEARCH AND DEVELOPMENT FUNDING

For R&D related to natural gas, a review of the combined budgets of Energy Efficiency and Renewable Energy (EERE) and Fossil programs alone, show that in 2010, the U.S. Government provided an estimated $80 million (3.5 percent), out of an almost $2.3 billion total. It is clear that if the United States wants to support an expanded role for clean-burning natural gas, leading to improved energy independence, energy efficiency, job creation and reduced emissions, scarce R&D dollars should be, in part, focused on natural gas. These new natural gas technologies could be utilized in all energy sectors including homes, businesses, manufacturing, power generation, and transportation; as well as to enhance reliability and safety of the natural gas production and delivery system.

Natural Gas Research and Development Funding Information and Observations (Increase Funding for Natural Gas Research and Development)

The $100 million Industrial Technology Program (ITP) continues to be the only program at DOE that focuses a portion of their budget on developing new more efficient technologies for manufacturing. Many of these technologies will be powered by natural gas.

Approximately 60 percent of the $673 million 2010 fossil energy budget for R&D was appropriated for coal while only 2.5 percent was directed to natural gas.

During 2010, Coal accounted for 22 percent of the country's primary energy use while natural gas represented 25 percent of the county's primary energy use. It would be fair and prudent to spend comparable R&D funding for natural gas.[2]

---

[1] http://marcelluscoalition.org/wp-content/uploads/2010/05/PA-Marcellus-Updated-Economic-Impacts-5.24.10.3.pdf.

[2] http://www.eia.gov/oiaf/aeo/tablebrowser/#release=AEO2011&subject=0-AEO2011&table=2-AEO2011&region=1-0&cases=ref2011-d120810c.

The American Recovery and Reinvestment Act spending stimulus provided $3.4 billion to the Fossil Energy Program. All was spent on coal.

The approximately $200 million buildings program at EERE has no specific program to support natural gas technologies for homes and businesses even though approximately 70,000,000 U.S. homes and businesses use natural gas.[3]

Currently natural gas vehicle (NGV) R&D at USDOE is $5 million. Electric vehicle R&D is approximately $128 million.

The Office of Electricity and Energy Reliability only funds R&D programs for the Electric Grid, not the entire energy delivery system, thus discounting the importance of our Nation's gas pipeline infrastructure which currently supplies 21 percent of U.S. electricity.

No money within the Renewable program is directed toward the development of technologies to produce renewable natural gas (RNG) from livestock manure, landfills, wastewater treatment, or woody-bio-mass even though RNG may offer the most efficient means to deliver nonwind or solar renewables to energy consumers.

The current proposed DOE budget by the administration provides no funding or R&D program direction for natural gas vehicles, efficiency improvements for natural gas power generation or home appliances, efficiency for natural gas commercial cooking, natural gas carbon capture, renewable natural gas technology, or development of hybrid solar natural gas technologies.

Following are recommendations that begin to address the lack of natural gas R&D at DOE. Within some of the recommendations are suggested resource amounts. GTI suggests these amounts as part of whatever allocated dollars are agreed upon between the Congress and the administration. We are not suggesting new money—just a reasonable and prudent refocus supporting an equitable approach for natural gas R&D.

Residential homes and commercial buildings consume more than 40 quadrillion Btus (or Quads) of energy. Developing building technologies that utilize the least amount of total energy; provide similar performance as existing technologies and take advantage of renewable opportunities can ensure the most efficient use of important domestic energy resources such as natural gas.

Natural gas is an important domestic energy resource, with nearly all of U.S. demand for natural gas coming from North America and 52 percent of all U.S. homes utilizing natural gas for space/hot water heating or cooking. While an expanding supply from new sources such as gas shales has resulted in a flattening of prices—a trend that is expected to continue, this domestic source of energy should be used in the most efficient and clean manner ensuring the maximum benefit of existing and future supply.

BUILDINGS PROGRAM

The natural gas industry, manufacturers, and R&D performers will identify and capture financial support for this effort with 20 to 40 percent co-funding expected, depending on the type of R&D performed.

We recommend natural gas efficiency R&D within the DOE's Buildings Technology Program of $12 million. This is a very small request relative to their overall 2010 budget which was more than $200 million, and this request is supported by the American Gas Association (AGA) and numerous gas utilities and other gas related trade associations.

Specific program initiatives include:

Space Conditioning and Water Heating Efficiency and Operational Improvements.—$2.9 million.

Building Systems and Community Energy System Technologies.—$2.6 million.

Breakthrough Technology Development.—$2.1 million.

Development of Higher-Efficiency Commercial Food Service Equipment.—$1.6 million.

Solar/Natural Gas Hybrid Systems.—$2.8 million.

INDUSTRIAL TECHNOLOGY PROGRAM

Within ITP, we are concerned of the new focus proposed in the President's fiscal year 2012 budget proposal. This new focus of R&D support for manufacturing of advanced materials discounts the 20 years of stakeholder involvement by the steel, glass, aluminum, heat-treating food processing, and other energy intensive industries that have worked with the Industrial Technology Program to develop new processes and other means to reduce energy consumption and improve manufacturing

[3] A.G.A. "Gas Facts: with 2008 Data", Tables 8–2 and 8–3.

technologies. Many of these stakeholders have already voiced their concerns to Members of Congress and DOE.

GTI suggests that a good guide for ensuring that the ITP addresses the R&D needs of energy-intensive manufacturing industries can be found in section 452 of the "Energy Independence and Security Act of 2007". We are not suggesting the specific funding outlined in that section, but rather the language regarding the scope and focus of the ITP presented in section 452 titled "Energy Intensive Industries Program."

We also recommend specifically that ITP include a focus on waste heat recovery, and combined heat and power.

—Gas Heat Pump Technology (CHP);
—Micro Combined Heat and Power Production Development (CHP); and
—CHP Efficiency and Carbon Reduction Improvements (CHP).

VEHICLE TECHNOLOGIES

As mentioned earlier the President's budget request for DOE in 2012 provided no funding for natural gas vehicle R&D even though the request for the overall budget for the vehicle programs was $588 million. GTI proposes a budget of $30 million for natural gas vehicle R&D. This request is supported by AGA, numerous gas utilities, and NGV America.

Specific program initiatives include:

—Development of new engines to meet a wider range of applications.
—Integrating natural gas engines into additional medium- and heavy-duty vehicle platforms such as buses, trash trucks, delivery trucks, and over-the-road trucks as well as marine and off-road applications.
—Develop new natural gas hybrid-electric platforms.
—Reduce cost and weight of compressed and liquefied natural gas storage systems.

Renewables.—Ensure that some portion of the Renewables program area can support the demonstration of a renewable natural gas production facility utilizing gasification to produce pipeline quality gas from woody-biomass. (Excellent efficiency—low emissions).

Fossil.—Currently there is no funding for natural gas and the President's USDOE Fossil Energy R&D budget request of $453 million is directed for coal carbon capture and sequestration. Program direction would be welcome for improving efficiency of natural gas power generation, natural gas exploration and production R&D to address environmental concerns, and natural gas power generation carbon capture.

Office of Electricity and Energy Reliability.—All funding is focused on the electric grid. The President's proposed budget of $238 million should provide program direction, at a minimum, to address the synergies of our Nation's pipeline infrastructure in relationship to electric grid reliability.

SECTION 999/THE RESEARCH PARTNERSHIP TO SECURE ENERGY FOR AMERICA

In 2005, as part of the Energy Policy Act, (section 999) funding was directed from the Nation's Oil and Gas Royalty Trust Fund to create a program that would focus on unconventional natural gas exploration and production R&D and on deepwater fossil fuel extraction R&D. The program was designed to provide $12.5 million to the National Energy Technology Laboratory (NETL) and $37.5 million to a nonprofit whose sole purpose was to manage and guide an energy R&D program as described above. This total of $50 million annually is directed spending.

The Research Partnership to Secure Energy for America was eventually chosen by DOE to manage the $37.5 million R&D program. Today, RPSEA continues to manage $37.5 million of the program and provides a resource plan to DOE annually for the execution of the funding.

RPSEA disseminates RFP's once USDOE approves its annual plan and a majority of the funding supports work performed by universities and nonprofits like GTI. The most recent annual plan delivered by RPSEA centers on performing environmentally focused R&D for shale gas and deepwater fossil fuel exploration. RPSEA stands ready to assist the Nation in better understanding and addressing the environmental issues related to shale gas and deepwater fossil fuel exploration and production.

The Congress should continue support for section 999, (which funds RPSEA) at current or increased levels.

—RPSEA continues to be a model of Private/Public R&D partnerships focused on delivering new technology and analysis.

—RPSEA is developing environmental and process solutions for shale gas and deepwater fossil energy exploration.
—Natural gas R&D funding in the 1980s and 1990s supported by the natural gas industry and the Federal Government helped to make possible the current and growing production of natural gas from shale formations, and contributed to the technological breakthroughs that reversed a 40-year decline in domestic oil production.[4 5]
—RPSEA, while having considerably less financial resources than the R&D programs of the 1980s and 1990s, can help continue the development of breakthrough technologies and processes to improve and enhance natural gas exploration and production.

PREPARED STATEMENT OF THE GAS TURBINE ASSOCIATION

The Gas Turbine Association (GTA) appreciates the opportunity to provide the Subcommittee on Energy and Water Development of the United States Senate Appropriations Committee with our industry's statement recommending fiscal year 2012 funding levels for the Department of Energy (DOE).

While the GTA recognizes the need to reduce Federal spending in today's fiscal environment, we respectfully recommend that the fiscal year 2012 appropriation for fossil energy include $20 million for the Advanced Turbines Program research and development (R&D) to meet critical national goals of fuel conservation, greenhouse gas reduction, fuel flexibility (including syngas and hydrogen), and criteria pollutant reduction. A spending level of $20 million is more appropriate than the administration's recommendation $14.6 million considering the fiscal year 2010 spending level was $32 million. A spending level of $20 million would still represent a significant cut of 37 percent and will result in pushing out the timeline for the development and deployment of environmentally advanced gas turbines by several years.

It is clear that dramatic reductions in greenhouse gas emissions are in the national interest. It is also clear that our economy needs more electric generation capacity to resume and promote further growth. Without new technology, the power generation industry will be hard pressed to produce additional electric capacity, while at the same time meeting the strict greenhouse gas emissions standards being set by States and the Federal Government.

Federal investment in research and technology development for advanced gas turbines that are more efficient, versatile, cleaner, and have the ability to burn hydrogen-bearing reduced carbon synthetic fuels and carbon-neutral alternative fuels is needed to ensure the reliable supply of electricity in the next several decades. Domestic coal based Integrated Gasification Combined Cycle (IGCC) with carbon capture and storage is one such approach that would significantly supplement available supplies of domestic natural gas to guarantee an adequate supply of clean and affordable electric power. Alternative fuel choices range from imported liquefied natural gas (LNG), coal bed methane, and coal-derived synthetic or process gas to biogas, waste-derived gases and hydrogen. Research is needed to improve the efficiency, reduce capital and operating costs, and reduce emissions.

TECHNOLOGIES FOR ADVANCED INTEGRATED GASIFICATION COMBINED CYCLE /H_2 GAS TURBINE—REDUCING THE PENALTY FOR CO_2 CAPTURE

At current rates of research and development it is unlikely that the Nation will have available the gas turbine technologies to meet the needs of carbon capture capable powerplants. The advancement of these technologies must be undertaken by the DOE since there is currently no pathway to the development, insertion, and maturation of these technologies into the Nation's electric power infrastructure based on market forces. Thus, a combined effort by the public and private sectors is necessary.

The turbines and related technologies being developed under the DOE Fossil Energy Advanced Turbines program will directly advance the performance and capabilities of future power generation with CO_2 capture and storage. Advances are needed to offset part of the powerplant efficiency and output reductions associated with CO_2 capture. Program funding is required to cost-share in the technology de-

---

[4] http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-energy-tech-report.pdf.
[5] http://mjperry.blogspot.com/2010/12/us-oil-and-gas-reserves-increased.html and http://www.eia.doe.gov/emeu/mer/pdf/pages/sec3__3.pdf.
[1] NHA is a nonprofit, national trade association dedicated to promoting the Nation's largest renewable resource and advancing the interests of the hydropower and new ocean, tidal, conduit and in-stream hydrokinetic industries and the consumers they serve.

velopment of advanced natural gas/hydrogen/syngas combustors and other components to realize the DOE goals.

Several GTA member companies are working cost-share programs with the DOE to develop technologies for advanced gas turbine powerplants with carbon capture. These technologies will:

—increase plant efficiency;

—increase plant capacities; and

—allow further reductions in combustion emissions of hydrogen rich fuels associated with CO_2 capture and storage.

This will help offset some of the efficiency and output penalties associated with CO_2 capture. These programs are funding technology advancement at a much more rapid rate than industry can do on their own.

The need for Federal cost-share funding is immediate. The funding levels in past years for the advanced turbines program has been inadequate to meet DOE's Advanced Power System goal of an IGCC power system with high efficiency (45–50 percent HHV), near-zero emissions and competitive capital cost. To meet this goal, the researchers must demonstrate a 2 to 3 percentage point improvement in combined cycle efficiency above current state-of-the-art Combined Cycle turbines in IGCC applications.

The plan for the IGCC-based powerplants is to develop the flexibility in this same machine with modifications to operate on pure hydrogen as the primary energy source while maintaining the same levels of performance in terms efficiency and emissions. The goal is to develop the fundamental technologies needed for advanced hydrogen turbines and to integrate this technology with CO_2 separation, capture, and storage into a near-zero emission configuration that can provide electricity with less than a 10-percent increase in cost over conventional plants by 2012.

The Advanced Turbines program is also developing oxygen-fired (oxy-fuel) turbines and combustors that are expected to achieve efficiencies in the 44–46 percent range, with near-100 percent CO_2 capture and near-zero NO_X emissions. The development and integrated testing of a new combustor, turbine components, advanced cooling technology, and materials in oxy-fuel combustors and turbines is needed to make these systems commercially viable.

The knowledge and confidence that generating equipment will operate reliably and efficiently on varying fuels is essential for the deployment of new technology. Years of continued under-funding of the Advanced Turbines program has already delayed the completion dates for turbine R&D necessary for advanced IGCC.

MEGA-WATT SCALE TURBINE RESEARCH AND DEVELOPMENT

In the 2005 Enabling Turbine Technologies for High-Hydrogen Fuels solicitation, the Office of Fossil Energy included a topic area entitled "Development of Highly Efficient Zero Emission Hydrogen Combustion Technology for Mega-Watt Scale Turbines". Turbine manufacturers and combustion system developers responded favorably to this topic, but DOE funding constraints did not allow any contract awards. The turbine industry recommends a follow-up to this solicitation topic that would allow the developed combustion technology to be tested in machines at full-scale conditions and allow for additional combustion technology and combustor development for both natural gas and high-hydrogen fuels.

The turbine industry believes that this technology is highly relevant to industrial coal gasification applications including:

—site-hardened black-start capability for integrated gasification combined cycle applications (the ability to restart an IGCC powerplant when the electric grid has collapsed);

—supplying plant electric load fueled on syngas or hydrogen;

—increasing plant steam cycle capacity on hot days when large amounts of additional power are needed; and

—in gas turbines for compression of high-hydrogen fuels for pipeline transportation.

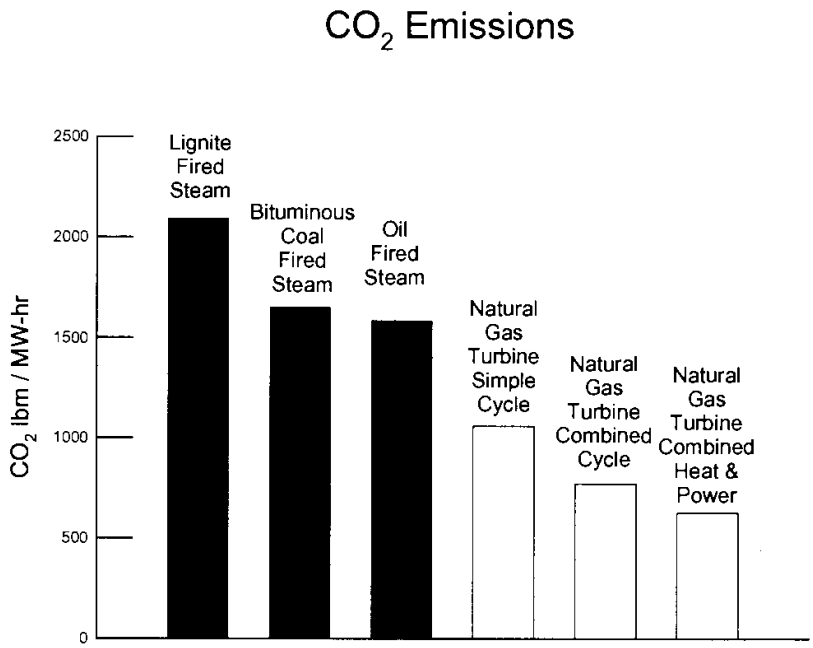
The development of MW-scale turbines (1–100 MW) fueled with either natural gas or high-hydrogen fuels will promote the sustainable use of coal. In addition, highly efficient aeroderivative megawatt-scale engines operate under different conditions than their larger counterparts and are installed for peaking or distributed generation applications. Funding is required to design efficient and low emissions combustors that accommodate the new fuels.

GAS TURBINES REDUCE GREENHOUSE GAS EMISSIONS

The gas turbine industry's R&D partnership with the Federal Government has steadily increased powerplant efficiency to the point where natural gas fired tur-

bines can reach combined cycle efficiencies of 60 percent, and quick-start simple cycle peaking units can reach 46 percent. The gas turbine's clean exhaust can be used to create hot water, steam, or even chilled water. In such combined heat and power applications, overall system efficiency levels can reach 60 to 85 percent LHV. This compares to 40–45 percent for even the most advanced thermal steam cycles (most of which are coal fired).

Gas turbines already play a very significant role in minimizing greenhouse gas emissions worldwide. Gas turbines are both more efficient and typically burn lower-carbon fuels compared to other types of combustion-based power generation and mechanical drive applications. The Nation needs to reinvigorate the gas turbine/government partnership in order to develop new, low-carbon powerplant solutions. This can be done by funding research to make gas turbines both efficient and more capable of utilizing hydrogen and synthetic fuels as well as increasing the efficiency, durability and emissions capability of natural gas fired turbines. If the Congress provides adequate funding to DOE's turbine R&D efforts, technology development and deployment will be accelerated to a pace that will allow the United States to achieve its emissions and energy security goals.



GTA respectfully requests $20 million in fiscal year 2012 appropriations for the Fossil Energy Advanced Turbines Program to meet critical national goals of fuel conservation, fuel flexibility (including natural gas, syngas, and hydrogen), greenhouse gas reduction, and criteria pollutant reduction.

Gas Turbine Association Member Companies.—Alstom Power; GE Energy; Florida Turbine Technologies; Rolls-Royce; Siemens Energy; Solar Turbines; Pratt & Whitney Power Systems; Strategic Power Systems; and VibroMeter.

PREPARED STATEMENT OF GE ENERGY

OVERVIEW

The following testimony is submitted on behalf of GE Energy (GE) for the consideration of the subcommittee during its deliberations regarding the fiscal year 2012 budget requests for the Department of Energy (DOE). GE recognizes that particularly difficult choices must be made in fiscal year 2012. These budget pressures make it essential that the subcommittee prioritize those programs that will con-

u:\graphics\y2012\GTA1.eps

tribute to economic growth and jobs creation and support core technology development. GE recommends:

—in the coal budget, increased investment in integrated gasification combined cycle technology development;

—funding at the levels requested by the administration for solar and wind technologies; and

—support for Smart Grid Research and Development.

FOSSIL ENERGY

Coal Program, Advanced Energy Systems, Gasification Systems.—The proposed fiscal year 2012 budget would reduce gasification research and development (R&D) by 32 percent from the fiscal year 2010 funding level. This trend confirms a fundamental shift in DOE's focus to advanced combustion/postcombustion carbon capture—ostensibly due to potential application to new and existing plants. GE believes that this is a flawed strategy that compromises the future of coal. It ignores the superior environmental performance of Integrated Gasification Combined Cycle (IGCC) with respect to water usage, criteria pollutant emissions, hazardous air pollutants and useful coal byproducts. It also ignores the proven ability of IGCC with full-scale, commercially proven, pre-combustion carbon capture to provide the lowest avoided cost of CO_2 compared to other technologies.

It remains the case, however, that the base cost of IGCC must be reduced further to provide a low-carbon option for coal that does not depend on incentives. Today the higher initial capital cost of IGCC combined with the current low cost of natural gas places IGCC at a disadvantage. DOE studies have shown that IGCC with carbon capture and sequestration (CCS) can achieve a cost of electricity equal to current new coal generation without CCS, but not without further technology improvements. The fiscal year 2012 budget is insufficient to develop these improvements.

DOE should prioritize technology programs having dual benefits in terms of reducing base plant cost that will also reduce the avoided cost of CO_2 as compared to conventional coal with carbon capture. GE recommends that the fiscal year 2012 budget for IGCC restore the fiscal year 2010 funding level of $63 million to support programs having nearer term and dual benefits:

—design for constructability and cost/technology tradeoff modeling ($8 million);

—design methodologies and technologies for availability and reliability ($7 million); and

—operational flexibility for tomorrow's grid ($5 million) (to support the higher penetration of renewable generation).

Clean Coal Power Initiative.—The Clean Coal Power Initiative (CCPI) is an outlet for validation at commercial scale and prototype application of technology from the coal R&D programs. The oversubscription of the CCPI–3 solicitation demonstrated industry's interest in undertaking coal projects. However, the continuing uncertainty of carbon policy makes private investment in demonstrations that explicitly require carbon capture and sequestration—which reduces plant output, reduces efficiency, increases fuel consumption and exposes the project developer to potential legal risk—difficult to justify.

Taking these concerns into consideration, GE recommends that DOE move forward with the development of a CCPI–4 solicitation no later 2015. The solicitation should not exclusively require CCS, but should include EOR and other beneficial uses of CO_2, and should allow for technologies that have dual benefits as described above. A phased program should be employed for projects that incorporate CCS, to begin with funding of front-end engineering designs (FEEDs) and site characterization before proceeding further. This will enable a utility to provide accurate cost data to its regulators and demonstrate that it has a sequestration resource with sufficient capacity for the life of its plant.

Advanced Energy Systems, Hydrogen Turbines.—The proposed fiscal year 2012 budget will reduce funding for the Hydrogen Turbine program by 53 percent from fiscal year 2010. The program has been successful in meeting technical goals and working toward offsetting much of the performance penalty associated with coal-fueled IGCC carbon capture while also achieving very low NO_X emissions. However, funding limitations have delayed the program from meeting its original 2015 goals until 2016–2017, and the fiscal year 2012 budget reduction will extend the delay out until 2020. This presents a high risk of technology not being ready for the next CCPI demonstration opportunity. GE recommends funding of $45 million in fiscal year 2012 to help recover schedule so that advanced hydrogen turbine technology is ready for the next CCPI opportunity.

Water Management.—Large amounts of water are needed to produce or extract energy, and large amounts of energy are needed to treat or transport water. EPA

has recently released a proposed Cooling Water Intake Rule that underscores the important linkage between water use and energy generation. What is more, CO_2 capture increases raw water usage by up to 125 percent, depending on the underlying technology. In order to achieve DOE's aggressive goals of reducing freshwater withdrawals and consumption 50 percent by 2015 and 70 percent by 2020, water-related R&D funding is needed. Despite this need, yet again this year, DOE has requested no new funding for the Water Management subprogram, and also has stated that all projects involving Water Management are to be suspended.

GE believes that funding should be provided for R&D for innovative water reuse technologies and demonstration projects including:

—cooling tower blowdown reuse;
—Flue Gas Desulphurization wastewater reuse and recovery;
—ash pond solids reduction; and
—treatment and reuse of produced water from unconventional oil and natural gas production to further reduce environmental impacts and operational costs of upstream energy processes.

Support also is needed to advance reuse/treatment technologies for the conversion of impaired wastewater streams into sources of renewable water in areas of water scarcity, reducing the need to use energy to transport water over long distances and to support electricity generation.

RENEWABLE ENERGY

Solar.—GE urges the Congress to fully fund the DOE's fiscal year 2012 budget request for Solar Energy. This request for $457 million represents a necessary commitment to accelerate the development and deployment of solar, particularly Photovoltaics (PV). GE is investing significantly in solar PV technology with a focus on cost reduction. Public funding for technology innovation and R&D is critical to improving solar's cost competitiveness with traditional power-generation technologies and to achieving the ambitious goal of a dollar-a-watt installed price for solar electricity before the end of the decade. In addition, funding for Systems Integration will provide more solutions for higher penetration of PV on the grid. By enhancing the affordability and reliability of solar, these investments in R&D and grid integration can advance the adoption of this technology by utilities and other consumers.

Wind.—GE also urges the Congress to fully fund the DOE's fiscal year 2012 budget request for Wind Energy of $127 million. This funding will support the continued evolution and scaling of this technology. GE is the leading wind turbine supplier in the United States and has invested more than $1 billion in wind technology development since 2002. Further progress in improving the cost, performance, and reliability of wind technology is critical. In particular, we believe the program's increased focus on advanced drivetrains, control systems, and components represent important investments in areas where public R&D plays a critical role in accelerating technology development and deployment. In addition, continued support for the DOE's new offshore wind R&D and demonstration program will be essential to the development of a domestic offshore wind market and manufacturing base.

SMART GRID

Electricity Delivery and Energy Reliability.—GE supports the fiscal year 2012 budget request for Smart Grid Research and Development. R&D on Smart Grid technologies will advance reliable, affordable, efficient, and secure delivery of electric power to industrial, commercial, and residential customers, while at the same time transitioning the grid to support new forms of renewable energy. Integration of traditional grid electric infrastructures with modern IT computer and communications systems will be necessary, and GE is working closely with national and international standards development organizations in the development of Smart Grid interoperability standards. Cybersecurity is a fundamental design principle of this effort.

R&D is required to develop advanced grid analytics software to optimize grid efficiency and reliability, including "Big Data" storage and real time analysis and exascale computing. Funding through ARPA–E and its Wireless Innovation Fund also will be critical to the development of cutting edge wireless technologies needed for the acquisition of data for grid analytic programs.

In order to reduce risk and accelerate the adoption of new advanced Smart Grid technologies R&D funding will be required for the development of Smart Grid modeling, simulation, and visualization of both the transmission and distribution networks. Advanced modeling capabilities will serve as a critical tool in the modernization of the electric grid by assisting grid operators in identifying the technical limits

of conventional grid technologies, and facilitating development of new technologies and solutions to respond to a changing energy mix and an increasingly responsive consumer base. In addition, advanced modeling capabilities can enable grid operators and power systems planners to aggregate, analyze, and act upon the vast quantities of data collected by Smart Grid technologies, thereby unlocking the full potential of the Smart Grid. DOE should expand industry participation in this program to fully leverage work already underway.

Smart Grid Renewables and EV Research and Development.—The Smart Grid can fundamentally change the way electricity is generated, transmitted, and consumed, thereby delivering substantial improvements in the efficiency and reliability of our Nation's electric grid. Additional research is needed in areas such as the integration of plug-in hybrid electric vehicles and advanced management of distribution voltage.

GE recommends that in order to achieve higher levels of renewables penetration, R&D funding should be set aside for power electronics development. GE recommends that the Congress provide support for DOE to conduct research into applications of power electronics to support Smart Grid technologies.

Energy Storage.—GE endorses the requested funding for further research into energy storage technologies. The fiscal year 2012 budget request appropriately broadens the scope of interest to include innovations in new battery chemistries. This could lead to radical improvements in energy storage performance. Electricity storage is a critical technology to enable both deployment of electric vehicles and improvements in grid stability and efficiency through utility-scale storage.

GE recommends that equal attention should be given to both electric vehicles and storage. The requirements of utility-scale storage are quite different from those of electric vehicles. GE recommends inclusion of research into large-scale energy storage into this line item. This includes all potential storage modalities such as compressed air, pumped hydro, and flywheel technologies.

COMBINED HEAT AND POWER

Industrial Technologies Program.—GE supports the request for $25 million in funding for the Combined Heat and Power (CHP) Generation line item of the Industrial Technologies Program. This funding has enabled demonstration of a reciprocating natural gas engine operating at 47-percent efficiency, up from a baseline of 37 percent while preserving the exhaust heat for combined heat and power applications. When used in CHP applications the total efficiency can reach 90 percent, making this by far the highest-efficiency and lowest-emission solution for distributed electricity generation. Gas engines also have rapid start and efficient load following capability making this a key technology to ensure continued stable electric grid operation with increasing addition of variable resources such as wind. Continued funding will enable completion of the final phase of demonstrating 50-percent efficiency.

PREPARED STATEMENT OF GSI ENVIRONMENTAL INC.

As an environmental consulting firm with more than 25 years experience in the oil and gas industry, we strongly encourage the U.S. Senate Appropriations Committee to continue to fund the important work of Department of Energy (DOE) Oil and Gas Research and Development Program for development of new and improved technologies for environmental management in the U.S. domestic oil and gas sector.

Need for Improved Environmental Management Technology.—With the current expansion of the shale gas industry into new geographic regions of the United States and the over-riding goal of achieving U.S. energy independence, the coming years will see ever-increasing exploration, drilling, and production activity throughout the country. As this rapid expansion is underway, the general public and media are already demanding improved measures for protection of natural resources and public health.

Key Role of DOE.—The DOE Oil and Gas Research and Development Program is the only Federal program currently dedicated to addressing these environmental concerns. The DOE, through the Research Partnership to Secure Energy for America (RPSEA), works with the scientific community and the oil and gas industry to develop new technologies for efficient resource development and environmental protection. This information is then shared with both large and small producers to improve environmental management practices nationwide.

Benefits of DOE Environmental Research and Development Program.—The attached table identifies 10 examples of projects supported by the DOE RPSEA program which are providing practical, tangible benefits in terms of improved environmental management in the domestic oil and gas sector today, including:

—Environmentally Friendly Drilling Practices to reduce the footprint of drilling operations and enhance environmental protection measures;
—Treatment of Highly Saline Produced Water to allow reuse and recycling, rather than discharge, of valuable water resources, as well as recovery of a marketable salt product;
—Protection of Sensitive Eco-Systems in Major Shale Gas Plays in Colorado and Utah, in order to reduce potential environmental impacts and costs of shale gas development;
—Innovative Methods for Management of Produced Water including generation of electrical energy via waste heat recovery; reduction of saltwater production from mature oilfields by use of particle gel treatments; and improved management methods to reduce water demand and enhance water reuse for hydrofracturing operations;
—New Road Building Techniques to reduce environmental impacts to sensitive desert terrains and ecosystems of the Western United States during transport of oil and gas production fluids.

Cost-Effective Research and Development.—The RPSEA program provides a unique opportunity to leverage government funding with private sector resources. In all grants awarded by RPSEA, the recipient is required to secure sponsorship of industry partners and to provide matching resources for a significant percentage of the project budget. This policy not only ensures that the research work will be directly applicable to active oil and gas operations but leverages a relatively small investment by DOE to achieve significantly greater economic benefit.

The DOE Oil and Gas Research and Development Program is the only supporter of these and other environmental management initiatives. At a time of increasing dependence upon domestic oil and gas resources and an unprecedented expansion of shale gas drilling activities throughout our country, the practical environmental solutions developed by RPSEA are critical for the continued protection of our environment and the continued leadership of the U.S. oil industry in the arena of environmental stewardship.

We strongly encourage the U.S. Senate Appropriations Committee to preserve and expand the funding of the DOE Oil and Gas Research and Development Program and RPSEA so that they may continue the important work for energy independence and environmental protection.

TABLE 1.—EXAMPLES OF RESEARCH AND DEVELOPMENT PROJECTS SUPPORTED BY RESEARCH PARTNERSHIP TO RESTORE ENERGY FOR AMERICA

Project title	Summary information
2009	
Improvement of fracturing in gas shales.	Use nondamaging fracturing fluids and light weight proppants combined with foams to maximize fracture length, minimize formation damage, minimize use of water in fracturing and minimize disposal of fluids for gas shale reservoirs.
Electrical power generation from produced water—Field demonstration of ways to reduce operating costs of small producers.	Identify and demonstrate technology that will reduce the field operating cost of electricity and minimize environmental impacts by creating green electricity using produced water and no additional fossil fuel.
2008	
The environmentally friendly drilling systems program.	Combine new low-impact technologies that reduce the footprint of drilling activities, integrate light weight drilling rigs with reduced emission engine packages, address on-site waste management, optimize the systems to fit the needs of a specific development sites, and provide stewardship of the environment.
Pretreatment and water management for fracturing water reuse and salt production.	Evaluate the applicability of three pretreatment processes to pretreat high-total dissolved solids, high-hardness fracturing water, such as is found in the Marcellus shale, for thermal recovery of water and a marketable salt product for both stationary and mobile pretreatment facilities.
Barnett and Appalachian shale water management and reuse technologies.	Develop water management methods and technologies that reduce demands for freshwater, reduce environmental impact of brine disposal, and ensure supplies of water for well drilling and completion for natural gas development in the Barnett and Appalachian Shale Plays.

TABLE 1.—EXAMPLES OF RESEARCH AND DEVELOPMENT PROJECTS SUPPORTED BY RESEARCH PARTNERSHIP TO RESTORE ENERGY FOR AMERICA—Continued

Project title	Summary information
2007	
Cost-effective treatment of produced water using co-produced energy sources for small producers.	Test a low-temperature distillation unit for produced water purification at the wellhead, yielding water clean enough for beneficial uses like drilling, stimulating, or waterflooding.
Field site testing of low impact oil field access roads—Reducing the footprint in desert ecosystems.	Reduce the environmental impact of mature field O&G operations and reduce the costs and regulatory delays associated with additional resource development. Identify and test new techniques to reduce the environmental impact of oil field lease roads in desert-like ecosystems.
Mitigating water production and extending the life of mature oil wells and further improve particle gel technology.	Establish methods to optimize particle gel treatments to increase oil recovery plus reduce water production, by improving waterflood sweep efficiency. Anticipated result will be reduction in the water production rate to decrease associated environmental risks and impact of any spills.
Paleozoic shale gas resources of the Colorado plateau and eastern great basin, Utah: Multiple frontier exploration opportunities.	Objectives of this study are to identify and map the major trends for target shale intervals and identify areas with the greatest gas potential; characterize the geologic, geochemical, and petrophysical rock properties of those reservoirs; reduce exploration costs and drilling risk especially in environmentally sensitive areas; and recommend the best practices to complete and stimulate these frontier gas shales.
An integrated framework for treatment and management of produced water.	Develop an Integrated Decision Framework to manage and treat produced water that has the potential to substantially reduce the overall costs and enhance gas recovery and economic viability (and longevity) of CBM and gas shale fields while minimizing potential environmental impacts.

Prepared Statement of the National Association for State Community Services Programs

As Chair of the Board of Directors for the National Association for State Community Services Programs (NASCSP), I am pleased to submit testimony in support of the Department of Energy's (DOE) Weatherization Assistance Program (WAP) and in support of DOE's State Energy Programs (SEP). In these difficult budgetary times, we understand that tough decisions have to be made. However, WAP and SEP are proven, cost-effective, measurably successful, and vital to the Nation's energy security and energy-efficiency movements, delivering savings to low-income Americans, businesses, and industry. In order to sustain the infrastructure and training and technical assistance expertise and activities begun with the funding provided by the American Recovery and Reinvestment Act of 2009 (ARRA), we seek a fiscal year 2012 appropriations level of $320 million for the WAP and $125 million for SEP. These funding levels are essential to continue and improve these outstanding programs for our citizens. Due to the close of ARRA funding in March 2012, normally appropriated funds are even more critical to allow the WAP network to fulfill its administrative duties and ensure continued quality and success at the expanded ARRA level.

Some examples of the Program's accomplishments include:

—Creation and continued support of more than 15,000 full-time, highly skilled jobs within the service delivery just in ARRA funds, with 8,000–10,000 additional jobs from annual grant funding, and many more in related businesses, such as materials suppliers;

—Weatherization of an additional 650,000 homes occupied by low-income families due to ARRA and approximately 28,000 homes through annual appropriations, thereby reducing energy use and associated energy bills;

—Served more than 6.7 million low-income homes since the program's inception, with an additional 38.3 million eligible;

—Saves an estimated 35 percent of consumption for the typical home, with savings continuing year-after-year and actual $1 savings increasing as fuel prices increase;

—Saves $437 in first-year energy savings for households weatherized;

—Returns $2.51 for every $1 spent in energy and nonenergy benefits over the life of the weatherized home;

—Serves as a foundation for residential energy-efficiency retrofit standards, technical skills, and workforce training for the emerging broader market;

—Supports communities through local purchasing and jobs created nationwide;
—Reduces residential and powerplant emissions of carbon dioxide by 2.65 metric tons/year per home;
—Decreases national energy consumption by the equivalent of 24.1 million barrels of oil annually.

WAP is the largest residential energy conservation program in the Nation and serves an essential function by helping low-income families reduce their energy use. The program was developed in the late-1970s as a response to rapidly rising energy costs associated with oil shortages created by oil embargoes. The Congress acknowledged that low-income families were particularly vulnerable to increased energy price fluctuations and created the program to assist those families by reducing the cost to heat their homes. WAP was institutionalized within the DOE in 1979 and today operates in all 50 States, the District of Columbia, five U.S. territories, and two Native American tribes. Approximately 1,000 local agencies provide services in every political jurisdiction of the country using direct hire crews and local contractors to do the work. These network providers use program funds to improve the energy efficiency of low-income dwellings, utilizing the most advanced technologies and testing protocols available in the housing industry. Since the Program's inception, more than 6.7 million homes have been weatherized using Federal, State, utility, and other monies.

WAP is still as relevant now as it was when it was formed in response to the energy crisis 30 years ago. The savings to America's most vulnerable citizens are significant and make a huge, immediate difference in their lives. These families have an average energy burden—the percentage of their income needed to pay residential energy bills—around 15 percent of their income as compared to around 3-percent for nonlow income households, or five times greater. And the poorest families have a much higher energy burden than that. For example, in the State of California, subcommittee Chairman Dianne Feinstein's home State, there are more than 718,000 households below 50 percent of the Federal poverty level. Those families have an energy burden of 36.5 percent—more than one-third of their income. With lower energy bills, these families can increase their usable income and buy other essentials like food, shelter, clothing, medicine, and healthcare. WAP provides a positive return on investment to meet its primary objectives of making homes warmer in winter and cooler in summer and creating safer and healthier indoor environments.

Because of the advanced diagnostics and technology developed in WAP, the program is the foundation for the emerging green energy-efficiency retrofit workforce. There are approximately 25,000 jobs in the WAP network, with many more supported in related businesses, such as material suppliers. These jobs are good, living wage jobs, which are more important than ever due to the economic downturn in the housing and construction industries. Workers are highly trained and receive ongoing instruction to further develop their skills. WAP is at the core of the larger energy-efficiency retrofit market, and its training curricula, methods, and centers play an integral role in developing tools and techniques and a workforce. WAP managers, trainers, and technical experts figure prominently in the Recovery through Retrofit Initiative, contributing their expertise to the Workforce Guidelines for Residential Energy Efficiency Workers and playing a key role in the development of standardized training curricula, worker certifications, and training facility accreditations.

American Recovery and Reinvestment Act provided $5 billion over 3 years for the WAP. This investment has allowed States and local agencies to increase significantly their efforts to weatherize 650,000 homes. WAP has created more than 15,000 new jobs across the country since 2009, making it the 8th highest ARRA job creating program. This figure does not include the countless jobs and businesses supported with WAP money in the foundering housing industry during this period. Furthermore, the network has weatherized more than 380,000 homes through February 2011, and will reach its production goals before the conclusion of ARRA grants.

While the ARRA invested significantly in energy efficiency and independence, in order to sustain the program beyond March 2012 it is critical that the WAP maintain adequate funding so the network can continue to provide jobs and support local economies as well as promote energy efficiency nationwide.

NASCSP urges the subcommittee to fund WAP at $320 million while providing $125 million for SEP. The WAP remains a crucial component of our Nation's energy future. WAP is a clearly proven investment, has provided significant energy savings, and has helped more than 6.7 million families live in safer, more comfortable living conditions. This is a program that has proved its worth and effectiveness for more than 30 years. NASCSP looks forward to working with subcommittee members in

the future as we attempt to create energy self-sufficiency and good jobs for millions of American families through these invaluable national programs.

PREPARED STATEMENT OF THE NATIONAL ASSOCIATION OF STATE ENERGY OFFICIALS

Mr. Chairman and members of the subcommittee, I am Phil Giudice of Massachusetts and chair of the National Association of State Energy Officials (NASEO). NASEO is submitting this testimony in support of funding for a variety of Department of Energy (DOE) programs. Specifically, we are testifying in support of no less than $125 million for the State Energy Program (SEP), which is equal to the authorization. SEP is the most successful program supported by the Congress and DOE in this area. This should be base program funding, which allows States to set their own energy priorities while contributing to national energy goals, with no competitive portion which focuses primarily on DOE's internal priorities. SEP is focused on direct energy project development, where most of the resources are expended. SEP has set a standard for State-Federal cooperation and matching funds to achieve critical Federal and State energy goals. As American Recovery and Reinvestment Act (ARRA) winds down over the remainder of this year, the base SEP funds are the critical linchpin to help States in building on these activities and expanding energy-related economic development, much as SEP has done for 30 years. We also support the $320 million fiscal year 2012 budget request for the Weatherization Assistance Program (WAP). These programs are successful and have a strong record of delivering savings to low-income Americans, homeowners, businesses, and industry. We also support the budget request for the Energy Information Administration (EIA) of $124 million. EIA's State-by-State data is very helpful. EIA funding is a critical piece of energy emergency preparedness and response, and there are significant new EIA responsibilities under EISA. NASEO continues to support funding for a variety of critical buildings programs, including Building Codes Training and Assistance, ENERGY STAR, the commercial buildings initiative/Better Buildings and residential energy efficiency at least at the fiscal year 2010 level. NASEO also supports funding for the Office of Electricity Delivery and Energy Reliability (OE), at least at the fiscal year 2010 funding level. Specific funding should be provided for the Division of Infrastructure Security and Energy Restoration of no less than $18 million, which funds critical energy assurance activities. We also strongly support the R&D function and Operations and Analysis function within OE. The industries program should be funded at least at the fiscal year 2010 level.

Formula SEP funding provides a basis for States to share best practices among themselves. These best practices (even without stimulus funds) allow States to get a great deal accomplished. These types of activities include energy financing programs, revolving loans, utility-based programs, energy service performance contracts, etc.

In January 2003 (and updated in 2005), Oak Ridge National Laboratory (ORNL) completed a study and concluded, "The impressive savings and emissions reductions numbers, ratios of savings to funding, and payback periods . . . indicate that the State Energy Program is operating effectively and is having a substantial positive impact on the Nation's energy situation." ORNL found that $1 in SEP funding yields:

—$7.22 in annual energy cost savings;
—$10.71 in leveraged funding from the States and private sector in 18 types of project areas;
—annual energy savings of 47,593,409 million source BTUs; and
—annual cost savings of $333,623,619.

Energy price volatility makes the program more essential as businesses and States work together to maintain our competitive edge.

STIMULUS FUNDING IMPLEMENTATION

We want to thank the subcommittee for the tremendous support provided in the stimulus package for a variety of State and local funding initiatives, including $3.1 billion for SEP, $5 billion for WAP, $3.2 billion for the Energy Efficiency and Conservation Block Grant and $300 million for the ENERGY STAR appliance rebate program. This is a major task. We have been working closely with DOE to implement these programs as quickly as possible. We have had regular calls with all the State energy officials to address implementation questions. We have also had a series of regional conference calls among the States, and we have seven regional coordinators helping to share "best practices" among the States. NASEO is sharing best practices and providing information to officials at all levels of government in order to more effectively coordinate this effort. We are convinced that these funds are

helping to engineer major positive changes in the U.S. economy that will improve all sectors of the economy. NASEO believes it is important to maintain base levels of appropriations for critical programs, such as SEP and WAP, in order to avoid a huge decrease in funding after a rapid stimulus increase.

With respect to ARRA spending for SEP, of the $3.1 billion appropriated, virtually all the money is now under contract and work is being implemented. We and DOE are working through the barriers that slowed spending, including National Environmental Policy Act compliance, Davis-Bacon wage rates, Buy-American clauses, historic preservation, lead paint requirements and general procurement issues. It is important to stress that the key figures are the "commitment" and "contracted" amounts, because that is when people get hired and work commences. States generally do not pay until projects are actually completed and milestones are met. We do not pay-up front in most cases. In economics jargon, the Federal spending figure is actually a lagging indicator. Of the ARRA funds dedicated to SEP and Energy Efficiency and Conservation Block Grant, more than $1 billion has been dedicated to energy financing programs in cooperation with the private sector. This has the greatest long-term potential.

Examples of Successful State Energy Program Activities.—The States have implemented thousands of projects. We have previously supplied to subcommittee staff examples of programs implemented under ARRA. Here are a few representative examples.

Alabama.—The State has dedicated $25 million for an energy revolving loan fund for business and industry, and has dedicated millions for energy efficient school retrofit grants. The Walker County school project alone is saving $146,000 per year in energy costs with a $300,000 SEP investment.

Alaska.—SEP-supported projects include the Village End-Use Efficiency Measures project, which assisted 31 remote villages. In the last year, more than 400 projects are now being implemented in order to reduce the terribly high-energy costs in these villages (they have historically paid, at a minimum, more than six times the national average for electricity costs).

California.—The State is implementing a comprehensive residential and commercial ($18.8 million) building retrofit program, an energy finance program for municipalities, and State building retrofits through revolving loans (more than $25 million), clean-energy business financing, low-interest loans for local governments and "Green Jobs" workforce training ($20 million). Jobs associated with the residential/commercial program total 1,200. The Energy Technology Assistance Program is creating more than 700 jobs.

Hawaii.—This State is focused on energy efficiency and renewable energy projects intending to supplement existing efforts. For example, promotion of ENERGY STAR upgrades for hotels, technical assistance to develop green buildings and other energy efficient buildings, have been two major projects. Funds have supplemented the public benefits program, the county energy efficiency efforts and alternative fuel efforts. Electric vehicle development, including infrastructure expansion, has also been a focus.

Illinois.—The SEP-supported Green Industry Business Development Program is supporting renewable energy and energy efficiency component manufacturers and manufacturers of recycled content products. One of the State's many school projects installed a geothermal heating and cooling system in four, Rantoul schools, which resulted in 145 local jobs and important training.

Iowa.—This State has committed substantial funding to municipal energy-efficiency projects and green jobs initiatives. A good example has been Sun Prairie Vista Court Apartments where more than $110,000 is being saved annually and the owner contributed $1.7 million. They have also instituted an energy loan program. Funding has supplemented programs and projects conducted under the State-funded Iowa Power Fund. The energy office has also been very involved in preserving propane supplies to respond to emergencies.

Kentucky.—$14 million has been dedicated to the Green Bank of Kentucky for energy efficiency financing for public buildings by utilizing revolving loans. In addition, funds were provided for an advanced energy efficient battery initiative, commercial office building energy efficiency retrofits, industrial facility energy efficiency retrofits, Home Performance with ENERGY STAR, utility smart grid activities, and $10 million for energy efficiency in K–12 schools. The school districts are targeting more than $14 million in savings for the program. The partnership with the University of Kentucky is also providing funds for "circuit riders" to work across the State on energy projects.

Louisiana.—$25.7 million has been committed to energy efficiency retrofits in higher education buildings; $15.7 million is dedicated to retrofits of commercial buildings and energy efficiency for new and existing homes; and $10 million has

been committed to renewable energy development. Their Home Energy Rebate Option (HERO) program provided energy-efficiency rebates of more than $1 million in 3 months for more than 400 homeowners. The commercial rebates are as high as $5,000 per facility.

Maine.—The State's SEP-supported project fund helped match funding for Tex Tech (sports equipment manufacturer) in North Monmouth, that allowed the purchase of new biomass equipment saving $400,000 in fuel costs and retaining 40 local jobs. The State's new home energy efficiency retrofit program has now begun and is implementing residential retrofits.

Mississippi.—$17 million was dedicated for energy efficient public buildings, including retrofits, performance contracting, and building energy codes; $10 million was allocated for renewable energy projects, smart meters on public facilities and support for community college workforce training. An additional $10 million was slated for businesses to implement energy efficiency or renewable energy upgrades. The Mississippi Job Protection through Energy Economic Development Program has provided grants to 55 companies for energy retrofits, with annual savings of almost $4 million. One example is the Laurel Machine and Foundry Company, where they are savings almost $100,000/year, and the company said that without these funds they would have closed and 32 employees would have lost their jobs.

Montana.—$22.3 million has been allocated to State universities, community colleges and other State facilities for energy efficiency projects; 89 projects are underway. The Montana Veterans Nursing Home in Columbia Falls has been the beneficiary of one of these projects, allowing the State to be repaid in only 3 months for the energy-efficiency upgrade, including cost share. Additional funds have been dedicated to renewable energy demonstration projects, including CORE Wind Power for a 3 MW facility in Ronan, Algae Aqua Culture Technologies for biomass projects, the biodiesel blend project in the Hi-Line area and a Chester-based oilseed processor project.

New Jersey.—$7 million has been committed to fund solar installations on multi-family buildings; $4 million for residential energy efficiency financing; $4 million for multi-family energy efficiency loans; $17 million for municipal energy efficiency incentives; $6 million for State building energy efficiency; and an additional $15 million for grants and loans for energy efficiency and renewable energy applications. Recently, 430 home energy retrofits were completed under their Home Performance with ENERGY STAR program.

Rhode Island.—Funds have been provided for a green building initiative in State facilities, a commercial/industrial energy efficiency initiative, building code upgrades and energy efficient transportation:

—$8.4 million has been allocated for renewable energy loans;

—$2.3 million has been allocated for a residential energy-efficiency initiative with approximately $7.5 million in leveraged funds projected.

Larger (utility-scale) renewable projects received $5 million. Sixty-nine renewable energy projects were funded in the past year alone.

South Carolina.—In 2010, the South Carolina Energy Office awarded grants to 12 nonprofit organizations, colleges, and governments to reduce energy costs and implement alternative energy projects. The Columbia College solar water heating systems for the dormitories are one example of this initiative. Other projects include solar absorption cooling at Claflin University, solar water heating for Central Electric Power Cooperative customers and solar projects for Furman University.

South Dakota.—$20.5 million has been dedicated to a State revolving loan for public buildings, with $3 million for a limited number of grants. Thirty-six projects are underway and activities include energy-efficiency retrofits, LEED ratings, on site generation, etc. The 100-year-old State capitol building was retrofitted, saving $2 million per year for that project alone.

Tennessee.—The State committed substantial resources to a comprehensive solar development program; 108 grants totaling $9 million have been awarded to a variety of solar projects, leveraging $24 million in private funds. These projects includes both consumer projects as well as manufacturing development. The State has also expanded its energy efficiency programs.

Texas.—$137.8 million has been allocated for public sector building energy efficiency, including revolving loans for schools, hospitals, municipalities, public colleges, etc., $52 million has been allocated for a competitive renewable energy grant program. Transportation efficiency programs have also been funded. Fifteen cities and one county recently installed energy efficient streetlights (with $7.8 million in SEP funds) that use one-thirtieth of the energy of the old technology. In Beaumont alone, 62 of the 168 traffic signals were replaced with energy-efficient technology.

Washington.—More than $20 million was allocated for an energy efficiency and renewable energy loan and grant program, including a $2 million grant to Port

Townsend Paper Corp. for a biomass project that is supporting 398 full- and part-time jobs and leveraged $53 million in other funds. More than 10 times the amount of available funds was requested by potential recipients. Additional funding of $5 million was provided for energy-efficiency credit enhancements (supporting $50 million in total project expenditures). Community-wide residential and commercial energy efficiency pilots received $14 million in grants. Other projects include an "electric highway initiative establishing recharging locations on I–5, support for a 7.5 MW wind turbine at the Grays Harbor Paper mill in Hoquiam in cooperation with the Grays Harbor PUD and a $1 million project for a wood-fired boiler at Forks Middle School in the Quillayute Valley Schools district.

PREPARED STATEMENT OF THE NATIONAL HYDROPOWER ASSOCIATION

The National Hydropower Association (NHA)[1] appreciates the opportunity to submit this statement regarding hydropower research and development (R&D) funding priorities for the fiscal year 2012 appropriations budget cycle.

NHA requests $100 million in the fiscal year 2012 Energy and Water Development Appropriations bill for the Department of Energy's (DOE) Waterpower Program to support initiatives across all hydropower technology sectors. The types of technologies covered are conventional hydropower, including pumped storage, as well as marine and hydrokinetic (MHK) technologies that access energy in ocean waves, tides, and the flowing water in rivers and man-made channels.

A $100 million funding level, split equally between the conventional and MHK programs, is necessary to support a national goal to double U.S. capacity of renewable hydropower and the research needed to increase production and create more than 1.4 million cumulative new jobs all across the country. Investment in hydropower R&D will drive innovation across the economy and maintain American competitiveness and create jobs.

Taking maximum advantage of our Nation's hydropower infrastructure by increasing efficiencies at existing hydro facilities and adding capacity at nonpowered dams are two near-term steps in the long-term effort to expand hydropower resources. However, development of some of this capacity requires necessary and needed R&D investment (both short and long term) in order to advance the state of the technology, study potential impacts, understand the extent of the developable resource, and more.

In particular, Government funding is needed at the front end when private investments would not recoup the full value of the resulting social good. This is especially true in the case of basic R&D initiatives, where under-investment is prevalent.

HYDROPOWER'S CURRENT AND POTENTIAL CONTRIBUTION

As America's leading renewable electricity resource, hydropower currently provides approximately 7 percent of our Nation's electricity supply and two-thirds of America's renewable electricity.[2] In addition, hydropower is positioned to meet 20 percent of President Obama's goal of 80-percent clean energy by 2035.

Looking to the future, NHA believes hydropower can double its contribution to the Nation's electricity portfolio, providing affordable, reliable, and sustainable baseload electricity through the responsible development and expanded use of conventional hydropower, pumped storage and new technologies, both MHK and conduit applications.

Support for this forecast is evident. With approximately 100,000 MW of installed capacity today, recent studies have determined that 60,000 MW of growth is possible by 2025 alone. Right now, there are projects with more than 88,000 MW of capacity before the Federal Energy Regulatory Commission (FERC). Applications for DOE Waterpower program funding opportunities in the past far outnumbered available funds—both for new MHK and conventional technologies. For example, in 2010 DOE awarded $32 million to seven projects to pursue upgrades to existing facilities, although dozens more projects submitted applications.

In addition to the new generation this development will bring online, hydropower projects provide a host of ancillary services to the grid and environmental benefits. Hydropower facilities can quickly go from zero power to maximum output, making them exceptionally good at meeting rapidly changing demands for electricity

---

[1] NHA is a nonprofit, national trade association dedicated to promoting the Nation's largest renewable resource and advancing the interests of the hydropower and new ocean, tidal, conduit and in-stream hydrokinetic industries and the consumers they serve.

[2] Based on 2009 generation data. Energy Information Administration. http://www.eia.doe.gov/cneaf/electricity/epm/table1__1.html.

throughout the day. In fact, because of its ability to be quickly dispatched, and its blackstart capability, hydropower was key in restoring power to the grid during the 2003 Northeast blackout. From a clean air perspective, hydropower generation in 2009 avoided more than 196 million metric tons of carbon emissions.[3]

HYDROPOWER'S RESEARCH AND DEVELOPMENT NEEDS SPAN ALL INDUSTRY SECTORS—CONVENTIONAL, NEW HYDROKINETIC TECHNOLOGIES AND PUMPED STORAGE

To realize the opportunity to increase hydropower generation that will strengthen our economy, environment and renewable energy supplies, continued and expanded funding support is needed to develop and deploy novel technologies, improve operational procedures, and provide rigorous analysis. Under a fully funded DOE Water Power program, all involved interests will have better access to information on the potential extractable energy from rivers and coastal waters; and technical support to harness this renewable resource through sustainable and cost-effective electric generation.

Funding to support these goals should be directed to:

Technology Development and Demonstration.—Improving hydropower technologies is the most important function of the Water Power program. Through previous funding, increases in efficiency and decreases in environmental impact have been realized. This investment must continue. New materials R&D and testing of better small- and low-head hydro technologies would bring down the costs of converting existing infrastructure for electricity generation and result in important upgrades and modernization of existing powerplants. Along these lines, initiatives that may be pursued include (but are not limited to):

—Deployment support for projects, both MHK and conventional hydro;
—Feasibility studies to identify additional low-cost, advanced-technology opportunities (Hydro Advancement Project); and
—Development of operational tools, standard methods, and best practices to maximize generation at existing and new facilities.

Resource Assessment/Environmental.—Innovation in the hydropower industry also goes beyond creating new technologies. The DOE program plays an important role in gathering baseline industry data, developing updated resource assessments and new growth analyses, studying project operations for maximization of both energy and environmental values, as well as studying new issues that may affect the industry—from potential effects of climate change on operations to addressing the energy storage needs to maintain a secure and functioning electric grid. Another key role for DOE is to determine the potential capacity on existing infrastructure. The work on the National Hydropower Assets Assessment Program is one example of a valuable tool that needs continued support. Also, the creation of a data clearing house of studies and funding for operations benchmarking would enable both the conventional and MHK industries to better forecast and model data and demonstrate the cost effectiveness of projects.

Additional activities include:

—Identify resources and address technology/policy needs to maximize medium- to long-term opportunities;
—Integrate resource assessments and cost curves with key pumped storage and small hydro technology needs to identify critical U.S. Army Corps of Engineers (COE) drivers; and
—Provide market analysis to accurately quantify and monetize hydropower ancillary services.

Regulatory Analysis.—In addition to these areas, hydropower development faces a comprehensive regulatory approval process that involves many participants that includes FERC, Federal and State resource agencies, local governments, tribes, nongovernmental organizations, and the public. The system strives to promote development while protecting important environmental values. However, it can also contain redundancies and inefficiencies that unnecessarily slow the deployment of clean renewable hydropower and delay much-needed environmental enhancements and benefits. At a time when we need all the renewable, affordable, and reliable energy we can get, the United States needs an updated regulatory process that gets projects off the drawing board and puts people to work in a more efficient way. To support these efforts, programmatic funding could:

—Engage regulators and environmental stakeholders to reduce license time and cost;

[3] According to EPA Carbon Equivalencies Calculator http://www.epa.gov/cleanenergy/energy-resources/calculator.html#results.

—Align energy generation and environmental priorities across river basins to facilitate development; and
—Generate data to more accurately correlate generation with environmental impacts.

ASSOCIATED FUNDING SUPPORT FOR HYDROPOWER DEVELOPMENT WITHIN THE CIVIL WORKS PROGRAMS OF THE ARMY CORPS OF ENGINEERS

NHA is also working in partnership with Federal agencies to identify and pursue smarter and more efficient processes to develop hydropower projects on Federal facilities. A new Memorandum of Understanding signed recently by COE and FERC demonstrates an on-going and active commitment to work together and identify current challenges and opportunities to increase hydropower development.

In this vein, NHA also calls for support of COE's own efforts to operate, maintain and upgrade its existing hydropower projects. NHA specifically supports the work COE is doing under its Hydropower Modernization Initiative (HMI) to develop a long-term capital investment strategy. One significant feature of the HMI is the Asset Investment Planning Tool, which was designed to:

—analyze the condition of critical components and the consequences of failure;
—determine the value of additional hydropower and its cost;
—quantify risk exposure for capital investments; and
—create 20-year funding scenarios to allow for timely and cost-effective rehabilitation or replacement of hydropower facilities and their components. To assist the Federal Government in rehabilitating aging equipment, COE also is pursuing increased use of non-Federal funds.

CONCLUSION

Unlocking the vast hydropower potential of our rivers, oceans, tides, and conduits requires funding the R&D initiatives that make innovative ideas a reality. The DOE Water Power program is an important source of support for the researchers, scientists, and developers working to grow hydropower's contribution to our country's clean-energy resources. Continued investment in this program is crucial to ensuring that innovative new technologies come to market and are able to generate the clean electricity America needs.

And the hydropower industry itself is doing its part to support investment in new technologies and project improvements. Among the hundreds of millions of dollars invested each year in environmental enhancements at hydro facilities, companies are supporting the development of a new generation of turbines that improve fish passage, generate more power, utilize water more efficiently, and improve the oxygen content of the water released downstream of a facility, among many other inventive technological and operational advancements.

PREPARED STATEMENT OF THE NEW MEXICO INSTITUTE OF MINING AND TECHNOLOGY

Dear subcommittee members: I am appealing to you to help deter the proposed budget cuts to the Department of Energy's (DOE) Fossil Energy Research and Development Program. My specific concern is for the National Energy Technology Laboratory (NETL) and its programs (such as Strategic Center for Natural Gas and Oil, NETL), which will be affected by the proposed cuts. The NETL provides the sustenance for important programs in research, education, and technology transfer.

The NETL is the only U.S. National Laboratory dedicated to fossil energy technology. It funds a wide range of energy and environmental research and development programs that will benefit the United States for years to come. The NETL truly plays a crucial role in keeping oilfield research alive in the United States, increasing in importance in recent years as research activities within the oil industry decline drastically. Major companies have dramatically reduced their research capabilities while the independent oil and gas producers have virtually none. It is possible that the United States could lose its leadership role in oil and natural gas research and technology unless the oil and gas programs of the NETL can be maintained.

It has been proposed that NETL's Natural Gas/Oil Technology program will be reduced in fiscal year 2011–2012. If this comes to pass, research programs both here at New Mexico Tech and all over the country could be severely impacted. Research conducted at American colleges and universities to increase domestic oil and natural gas production, to assist independent oil and natural gas producers, and to provide education and training in the newest technologies, will suffer. Efforts to provide

technology transfer to the independent oil and natural gas producers of our oil and gas-producing States will likewise be drastically curtailed.

The independent producers of the United States are now responsible for most domestic oil and gas production, as the major oil companies have increasingly sold their domestic oil assets to independents. Research sponsored by the DOE through such entities as NETL is the only significant source of unbiased technical research and development for these companies. As research at the National Laboratories, and the petroleum engineering departments and research institutes all over the United States will be severely impacted without this funding, service companies cannot fill the void created by this loss of research effort.

Thus, one of the most strongly affected groups will be the independent oil and gas producers of the United States, who are now the backbone of the domestic industry. For many years, the NETL has supported enhanced oil recovery research in support of our Nation's independent producers, as well as natural gas research and technology. The lack of NETL-funded energy research may not be significant to major oil companies, but it will certainly burden these local, relatively smaller, independent oil and gas producers.

Another facet of technology transfer that must not be overlooked is information. The information most needed by small producers are:

—production data;
—well information;
—surface leasing information; and
—many user-friendly software packages.

DOE funding enables outreach groups affiliated with universities to offer these data free online. This in turn allows small producers to substantially reduce their overhead, thus enabling them to compete in the oil and gas industry.

Finally, if oilfield research is discontinued, the vast amounts of residual oil remaining to be recovered in United States oilfields (more than 300 billion barrels) will be abandoned. Most of this cannot be recovered without the technological breakthroughs currently being sought through research funded by NETL. Reduced domestic oil production could potentially compromise our Nation's economic growth and security, forcing more and more reliance on imports.

In conclusion, science and industry have looked to the NETL for many years to help provide solutions for the survival of domestic oil and gas production. The continued existence of many of our research organizations and academic departments depends on continuation of Federal funding in order to carry out their multiple missions of education, technology transfer and research, which will ultimately benefit the Nation. Loss of the NETL's oil and gas research funding, on the other hand, will damage these missions and ultimately diminish our pre-eminence.

PREPARED STATEMENT OF THE NUCLEAR ENERGY INSTITUTE

The Nuclear Energy Institute[1] (NEI) supports the administration's request for fiscal year 2012 funding for the Nuclear Regulatory Commission (NRC) ($1.038 billion) and the following Department of Energy (DOE) programs:

Light Water Reactor/Small Modular Reactor Licensing Technical Support.—$67 million.

Fuel Cycle Research and Development.—$155 million.

Light Water Reactor Sustainability Program.—$21.3 million.

Nuclear Energy Enabling Technologies.—$97 million.

Integrated University Program.—$45 million.

Next-Generation Nuclear Plant.—$49.5 million.

Innovative Technology Loan Guarantee Program Office.—$36 billion in new loan guarantee authority for nuclear power projects.

In addition, the nuclear energy industry strongly opposes legislation to impose a proposed tax on electric consumers for the uranium enrichment facility decontamination and decommissioning fund.

[1] The Nuclear Energy Institute is the industry's policy organization, whose broad mission is to foster the beneficial uses of nuclear technology in its many commercial forms. Its membership, more than 350 corporate members in 17 countries, includes every U.S. utility that operates a nuclear powerplant as well as international utilities, plant designers, architect and engineering firms, uranium mining and milling companies, nuclear service providers, universities, manufacturers of radiopharmaceuticals, universities, labor unions, and law firms.

ENSURING A STRONG NUCLEAR REGULATORY COMMISSION

An independent, credible regulatory agency is required for public confidence in commercial nuclear energy facilities. During the next few years, NRC will be challenged to continue its inspection and licensing activities while analyzing the Fukushima Daiichi nuclear accident and determine what changes, if any, may be necessary in NRC requirements. Continuity and stability of the five-member commission during this critical time will be essential to ensure NRC staff and licensees have clear guidance on implementation of the lessons learned. NRC functions most effectively when it has a full complement of five commissioners, and the nuclear energy industry believes the Congress' highest priority should be ensuring that vacancies on the Commission do not occur.

The industry supports fiscal year 2012 funding at the NRC's requested level of $1.038 billion, which is a $28.7 million decrease below its fiscal year 2010 funding levels. The industry remains concerned, however, at the steep escalation in agency budgets and staffing levels over the last decade, from 2,763 staff in fiscal year 2001 to 3,981 staff proposed in fiscal year 2012, and from $487 million in fiscal year 2001 to more than $1 billion proposed in fiscal year 2012. The industry recommends, therefore, that any additional Fukushima-related work be funded by re-allocating resources and achieving greater efficiencies, without compromising safety oversight of existing plants and ongoing licensing activities on license renewal, power uprates, reactor design certifications, combined construction and operating licenses and small modular reactor licensing issues. The industry believes the NRC can absorb additional analysis of the Fukushima accident without diverting resources from other programs. If the NRC cannot do so, the commission should explicitly provide the subcommittee with the specific resource needs and what the agency can do to accommodate new activities within its current budget.

The industry applauds the continued oversight of the NRC by the Congress to prioritize agency actions. The agency has made some progress, but should continue to achieve greater transparency in its budgeting to reveal planned staffing and resource needs by individual divisions. This is particularly true concerning the defense and national interest programs funded by the taxpayer in appropriated funds. In any one year, NRC should ensure that these programs are funded at the entire 10 percent of available funds. A firewall should exist between fee and fee-relief sources of funds so the user fee is not used as an additional source of funding for appropriated programs. This would demonstrate to the Congress, the public and the industry, which pays 90 percent of the NRC's budget, that the budget fairly reflects those activities that are licensee-specific.

Once again, the administration has proposed terminating the Integrated University Program, which supports the Nation's universities and community colleges. This program is unique in supporting important nuclear science and engineering research and workforce training. It is a vital program that provides financial support for students and junior faculty. The program is managed jointly with DOE's Office of Nuclear Energy and DOE's National Nuclear Security Administration and has been authorized by the Congress. NEI supports $15 million for NRC to continue its participation in the program in fiscal year 2012 and recommends that NRC fund the program at that level, not at the $11.5 million it has proposed for fiscal year 2011.

DEVELOPMENT OF ADVANCED REACTOR TECHNOLOGIES

DOE's Office of Nuclear Energy fiscal year 2012 budget as proposed by the administration is lower than what was appropriated in fiscal year 2010. NEI supports the fiscal year 2012 budget as it continues the new initiatives for the Office of Nuclear Energy requested in fiscal year 2011. NEI believes that the following programs deserve support and represent the highest priorities for the nuclear energy industry:

Light Water Reactor Sustainability Program.—$21.3 million;

Light Water Reactor Small Modular Reactor Licensing Technical Support.—$67 million;

Nuclear Energy Enabling Technologies.—$97 million;

Integrated University Program.—$45 million; and

Next-Generation Nuclear Plant.—$49.5 million.

The Idaho National Laboratory (INL) is designated as the lead lab for nuclear energy. INL maintains an extensive research infrastructure and workforce that will become even more vital for postaccident analysis and response to the radiological clean-up at Fukushima Daiichi.

URANIUM ENRICHMENT DECONTAMINATION AND DECOMMISSIONING FUND TAX UNDUE BURDEN ON CONSUMERS

The administration's fiscal year 2012 budget calls for legislation to reinstate the uranium enrichment decontamination and decommissioning fund, with a proposed tax on electric consumers of $200 million a year for 10 years. Electric utilities have already paid twice for decommissioning and decontamination at uranium enrichment plants that were originally operated by the Energy Department—first as part of the price for uranium enrichment services from the facilities and again under provisions of the Energy Policy Act of 1992. Under the 1992 law, the tax on utilities was to end after 15 years or the collection of $2.25 billion, adjusted for inflation. The utilities paid this amount in full as specified by law. NEI will continue to oppose this proposal in legislation and appreciates the support of the subcommittee in rejecting this proposal in fiscal year 2010 and fiscal year 2011.

INTEGRATED USED FUEL MANAGEMENT PROGRAM

The Government has an obligation under the Nuclear Waste Policy Act to dispose of used nuclear fuel from commercial reactors and defense applications. The industry believes licensing should be completed. Also, numerous State and local governments and the National Association of Regulatory Utility Commissioners are actively opposing DOE's withdrawal of the application for the Yucca Mountain repository at NRC and in the courts. The project should proceed and be funded so that the technical review of the license application is completed. The industry opposes the fiscal year 2012 budget request by the NRC to terminate the licensing proceeding. We urge the subcommittee to request a specific plan and resources required for continuing the Yucca Mountain licensing process, assuming the courts rule the application cannot be withdrawn.

Given that it has been terminated, consumer payments into the Federal Nuclear Waste Fund should be suspended for the period of time for which there is no waste management program against which to assess costs. The industry supports a three-part integrated used fuel management strategy that includes:

—on-site storage at reactor sites and development of centralized storage at volunteer locations;

—research, development, and demonstration of advanced fuel cycle technologies; and

—development of a permanent repository.

NEI supports the work of the Blue Ribbon Commission on America's Nuclear Future to develop recommendations on how the Nation should manage used nuclear fuel and high-level radioactive waste and looks forward to reviewing the draft report scheduled for release this summer.

Given the importance of this report, the subcommittee should encourage the commission to complete its work as soon as possible.

The nuclear energy industry consistently has supported research and development of the advanced fuel-cycle technologies proposed in the Fuel Cycle Research and Development program ($155 million). DOE's plans should be adjusted based on its review of the recommendations of the Blue Ribbon Commission that the Congress accepts.

INDUSTRY SUPPORTS $36 BILLION FOR DEPARTMENT OF ENERGY INNOVATIVE TECHNOLOGIES LOAN GUARANTEE PROGRAM

The nuclear industry appreciates the support provided by the subcommittee for the DOE loan guarantee program for nuclear energy plants and uranium fuel-cycle facilities. NEI urges members to maintain the appropriated funds for projects under development for fiscal year 2011. The administration has requested an additional $36 billion in loan volume in fiscal year 2012. This would provide sufficient loan volume for projects already in due diligence at DOE, and would provide certainty to other projects in the development pipeline that financing support will be available. Absent some certainty that financing will be available, companies may slow development of these projects.

Loan guarantees for nuclear energy projects are not a subsidy and there is no cost to the taxpayer. The use of loan guarantees will lower the overall cost of nuclear energy projects, ultimately reducing the cost of electricity to consumers. Companies granted loan guarantees by DOE for nuclear energy projects must pay a premium for use of the program, plus cover all administrative costs.

Budget scoring is not required for nuclear energy loan guarantees, because simply approving loan "volume" is not an appropriation. It simply authorizes the agency to issue loan guarantees up to that amount. For most loan guarantee programs, in

which the Federal Government pays the cost of the loan guarantee, the 1990 Federal Credit Reform Act (FCRA) requires authorization of loan volume in an appropriations bill. However, the Government Accountability Office determined that the clean energy loan guarantee program authorized by the 2005 Energy Policy Act should not be subject to this FCRA requirement, because the companies receiving the loan guarantee pay the cost to the Federal Government of providing that guarantee—not taxpayers.

NEI continues to believe that the clean-energy loan guarantee program, although essential, is not yet a workable financing platform, and urges the subcommittee to exercise its oversight responsibilities on implementation by the executive branch, particularly on the issues of the credit subsidy cost that project sponsors are expected to pay.

ENVIRONMENTAL CLEAN UP

NEI supports DOE's budget request of $6 billion for the Environmental Management Office.

PREPARED STATEMENT OF NUSCALE POWER, INC.

Dear Madam Chairman and ranking member: On behalf of NuScale Power, Inc. of Corvallis, Oregon we request that the subcommittee approve the President's budget request of $67 million for small, modular reactors (SMRs) within the Office of Advanced Reactor Research Development and Demonstration. This request includes both the research portion for advanced SMRs, but especially the commercialization cost-share portion for up to two light water reactor SMR designs.

SMR technologies build on a rich history of American innovation and world-class nuclear design, manufacturing, and operations. The President has recognized the need for nuclear power as part of a comprehensive energy, environment and employment strategy for this country, including new financial incentives. NuScale is ready to deliver:

—NuScale Power uses a one-third-scale test facility on the Campus of Oregon State University to document critical tests required to comply with Nuclear Regulatory Commission (NRC) design certification and licensing. The next phases of regulatory approval are costly in the United States and require Federal support.

—Since last year NuScale Power has conducted extensive discussions with various government operations centers managed by both Department of Energy (DOE) and Department of Defense. We are in the process of scoping both research and deployment opportunities that have the potential to benefit the Federal Government directly by lowering the facilities' long-term costs and reducing their greenhouse gas impacts as an electric power consumer.

—NuScale Power is constructing a full-scale control room simulator to specifically address digital instrumentation, control, and human factors analysis that will be integrated in all of the next-generation nuclear plants, regardless of size. NRC staff has visited Corvallis to review these plans and provide input.

—As confirmed by a panel of independent experts whose work was presented to the NRC in September 2009, NuScale Power has achieved safety margins that are 10 times safer than the next generation of large nuclear plants. This translates into improved public safety and better financial risk management by using scalable technology.

—NuScale Power's inherently safe technology has received considerable attention since the natural disaster and ensuing nuclear incident in Japan. We have developed a 9-page "safety illustration" that can be viewed on our Web site. It shows how our reactor and spent-fuel pool might have responded to similar events. From what we know now, the results are very positive.

—Finally, in addition to the President's leadership in requesting funding for research, development, and demonstration of SMRs, NRC and its staff have also continued to provide the on-going licensing support efforts in their own separate budget request. In an NRC briefing held on March 29, 2011, NRC staff outlined for the Commission the planned approach to licensing SMRs. Staff concluded by saying, "It's not a matter of whether we can license these plants but how we best proceed." This was encouraging to us, and is a positive sign that the Congress can move forward with taxpayer dollars to support the licensing efforts.

Our company experienced a temporary financial setback earlier this year, but we are receiving considerable interest in new funding from a consortium that includes American manufacturers, fabricators, suppliers, constructors, and investment firms.

We have advised DOE that we will be in a position to compete for Federal cost-sharing dollars as early as fiscal year 2011 if the program is approved by the Congress.

NuScale Power wants to thank you and your subcommittee members for the support you have provided SMRs thus far. We look forward to continued work with you and your staff.

PREPARED STATEMENT OF RICHARD NEWTON HILL, JR., FORMER PRESIDENT/OWNER OF HILL EQUIPMENT CORP.

ONE-HALF OF 1 PERCENT OF THE ENERGY IN THE OCEAN WAVES IS ENOUGH TO PROVIDE THE ENTIRE WORLD'S ENERGY REQUIREMENTS

I wish to introduce and obtain a grant for my wave-and-tide actuated renewable energy pump.

USE AND DISCLOSURE OF DATA

This abstract includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed—in whole or in part—for any purpose other than to evaluate this abstract in particular U.S. Patent Application continuation-in-part (CIP) 12220244. However, if an award is made as a result of—or in connection with—the submission of this data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting award. This restriction does not limit the Government's right to use information contained in this data if they are obtained from another source with restriction.

Patent application CIP No. 12220244 is a continuation of U.S. Patent Application 10/600701. Patent Application 10/600701 was ready for issuance until this CIP was filed.

I will explain my way of harnessing the energy in the ocean waves. You simply hang a great ballast weighted piston on a chain or cable attached to a float or ship. As the float or ship rises and falls the ballast-weighted piston located at or near the sea floor and enclosed in a pipe is raised and lowered, causing a pumping action that then can be converted into any form of energy you want. All other attempts up to this time, involve mounting fragile and/or complex structures at or near sea level to do the work. This gives you the task of dealing with changing tides and wave conditions and systems that do not hold up in the adverse conditions of the ocean. If you place the ballast weighted piston inside a tube, say going up 100 ft. high from the ocean floor, in say 200 ft. of water, you now have a simple, robust pump with an approximate vertical 100 ft. tide and wave range of operation. Alternatively, to use the same example, a hole could be drilled or excavated 100–200 feet deep in the ocean floor and the cylinder is placed in this hole. The pump, under this arrangement, then can be brought right up to the shoreline if needed.

The initial steps are:

Phase I

Provide feasibility studies, which will include modeling.

Build a laboratory/shop model prototype pump.

Determine how much energy can be captured by my invention off the shores of the United States and its possessions.

Determine how much energy can be captured by my invention off the shores of other countries.

Determine the best design for the buoy or float and other components. Wave action is the result of molecular excitation and for practical purposes extends about 15 feet below the surface.

Selection of materials for buoy, pump cylinder, and piston.

Submit results to the Department of Energy for justification of additional funding.

Phase II

Build a hydroelectric power generating pilot plant approximately one-third the size of a full-scale electric powerplant capable of generating approximately 20 MW. This will be a permanent installation, will feed power into the power grid and be used to test any future modifications before they are put into general use. The renewable energy pumps will be placed in holes drilled in the ocean floor and/or on the ocean floor bed. The water they pump will be delivered to an enclosed dammed area and thence run through turbines to create electricity as the water flows back to the sea.

Phase III

Build a full-scale hydroelectric powerplant with accompanying pumps and dam based on the experience of phases I and II.

I have determined five additional significant uses for this pump:

Seafood Farming.—Pump water to a levied area and raise fish or shrimp, etc. When ready for harvest, you would let the water out and scoop up the fish or shrimp by hand or mechanically, eliminating the need for shrimp and fish trawlers, while guaranteeing a harvest or catch every time. This is similar to what is being done in some South American countries now, using their high tides to capture the water behind levees, and is the reason these countries can compete here in the United States with local fishermen.

Land Reclamation From the Sea, Etc.—Again, a levee would be thrown up with the pump on the ocean or sea side. The suction would run under the levee and excavate the water behind the levee, leaving dry land.

There Exists "Dead" Areas in the Sea, Depleted of Oxygen.—Pumps could be placed in these areas to circulate oxygen enriched sea water in and eliminate the "dead" areas.

Oil Contaminant Reclamation.—At surface level, a containment barrier, as is used today, would be put in place. A skimmer funnel would be placed inside the containment area just below the surface, its' suction leading back down to one or more pumps. The contaminants could be pumped up to a Tender where further skimming would transpire. A final phase may be introducing the oil/sea water mix into boiling brine. The water would be absorbed into the brine and the difference in the specific gravity between oil and brine will allow for a clean cut in removing the oil. Alternatively, the contaminants could be moved to a refinery or pumped to a levied area on shore for further processing, containment, confinement, and removal. A similar process, but with the suction at the bottom of the ocean, can be developed for crude such as Bunker "C", which have a tendency to remain on the seabed floor and eventually wash ashore in balls of oil/sea water contaminants.

Make the Deserts Bloom.—Pump the ocean water over or tunnel through mountain ranges, such as the Sierra Mountains on our west coast, spread the ocean water out on the desert floor. Hydroelectric power would be created, first to provide booster pumps, if needed, to assist moving the water over the mountains, then on the downside, the energy would again be reclaimed in the form of hydroelectric power, etc. The resultant evaporation from the desert floor would form clouds and the prevailing winds would carry the moisture eastward, causing rain to fall, "Making the Deserts Bloom", as the clouds meet the Rocky Mountains. If this proves feasible on our western deserts, then Morocco with the Atlas Mountains and the Sahara should become a top priority for me and the world to relieve the economic and political tensions building there and affecting us, bringing stability to that portion of the world. The Sahara is equal or larger in size than the entire United States. Hydroelectric power would again be created. Salt water basins could be created to concentrate and extract minerals from the sea as well as removing man made pollutants from the world's oceans. The world populations demand for potable or fresh water and food is projected to exceed the entire amount of fresh water and food available by the year 2020, making this the most important task to achieve as it will alleviate this projected problem. When fully deployed, the additional moisture added to the atmosphere will act like a "radiator" for the Earth, moderating the Earth's climate as well as providing a cleansing effect on the atmosphere by way of "washing" more pollutants out of the air.

BACKGROUND OF INVENTOR

Richard Newton Hill, Jr., hereafter called "inventor", attended UCLA, majoring in physics and the Georgia Institute of Technology, majoring in chemical engineering. The inventor went to work as an oilfield roughneck, drilling for oil on offshore drilling rigs in the Gulf of Mexico off the coast of Louisiana for about 5 years then worked another 5 years as a sales engineer selling construction, marine, industrial and oilfield equipment in the Louisiana and gulf coast regions. In 1967, the inventor launched his own business, Hill Equipment Corp., selling, repairing, fabricating and inventing equipment for the construction, marine, industrial, aerospace and oilfield industries, including the National Aeronautics and Space Administration (NASA), Michoud, New Orleans, Louisiana for the manufacture of the NASA space shuttle.

The inventor is currently writing three books, has filed outside witness testimony with the U.S. Congress Subcommittee on Commerce, Justice, Science, and Related Agencies regarding allegations of the sabotage of the Space Shuttle *Columbia* and

the assassination of President John F. Kennedy. This and related information can be viewed at the inventor's Web sites—www.sabotagecolumbia.info and www.sabotagecolumbia.com.

The inventor is well versed in the technical feasibility of his invention' and there is nothing proposed that is not now technically feasible.

PREPARED STATEMENT OF THE SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS

We are Dr. Lloyd Nicholas Trefethen, president, and Dr. Reinhard Laubenbacher, vice president for Science Policy, of the Society for Industrial and Applied Mathematics (SIAM). On behalf of SIAM, we are submitting this written testimony for the record to the Subcommittee on Energy and Water Development of the Senate Committee on Appropriations.

SIAM has approximately 13,000 members, including applied and computational mathematicians, computer scientists, numerical analysts, engineers, statisticians, and mathematics educators. They work in industrial and service organizations, universities, colleges, and government agencies and laboratories all over the world. In addition, SIAM has more than 400 institutional members—colleges, universities, corporations, and research organizations. SIAM members come from many different disciplines, but have a common interest in applying mathematics in partnership with computational science toward solving real-world problems.

First, we would like to emphasize how much SIAM appreciates your subcommittee's continued leadership on and recognition of the critical role of the Department of Energy (DOE) Office of Science and its support for mathematics, science, and engineering in enabling a strong U.S. economy, workforce, and society. DOE was one of the first Federal agencies to champion computational science as one of the three pillars of science, along with theory and experiment, and SIAM deeply appreciates and values DOE activities.

Today, we submit this testimony to ask you to continue your support of the DOE Office of Science in fiscal year 2012 and beyond. In particular, we request that you provide the Office of Science with $5.42 billion, the level requested in the fiscal year 2012 budget request. SIAM is aware of the significant fiscal constraints facing the administration and the Congress this year, but we note that, in the face of economic peril, Federal investments in mathematics, science, and engineering create and preserve good jobs and help to maintain U.S. pre-eminence in innovation, upon which our economy depends.

THE ROLE OF MATHEMATICS IN MEETING ENERGY CHALLENGES

The Nation faces critical challenges in energy, including in energy efficiency, renewable energy, improved use of fossil fuels and nuclear energy, future energy sources, and reduced environmental impacts of energy production and use. As DOE and the research community design a long-term strategy to tackle these issues, the tools of mathematics and computational science (theory, modeling, and simulation) have emerged as a central element in designing new materials, predicting the impact of new systems and technologies, and better managing existing resources. Already, mathematical and computing researchers in universities, national laboratories, and industry are providing insights that propel advances in such fields as nanotechnology, biofuels, genomics, climate modeling, and materials fabrication.

To tackle many of these challenges, DOE must be able to understand complex systems such as the U.S. power grid, the dispersion of nuclear radiation after a disaster, and the Earth's climate system. These and other complex systems have high levels of uncertainty, lack master plans, and are susceptible to breakdowns that could have catastrophic consequences. Understanding complex systems helps mitigate these risks and facilitate the development of controls and strategies to make systems more efficient.

These issues were addressed in a May 2008 report by an independent panel of mathematicians that reviewed the challenges and strategic plans of all units of DOE in order to better define the goals for the DOE Applied Mathematics Program, which is located within the Office of Advanced Scientific Computing Research (ASCR) in the Office of Science.[1] In light of the broad need for complex systems un-

[1] Applied Mathematics at the U.S. Department of Energy: Past, Present and a View to the Future. A Report by an Independent Panel from the Applied Mathematics Research Community, May 2008. Available on line at http://brownreport.siam.org/Document%20Library/Brown__Report__May__08.pdf.

derstanding, the panel recommended that DOE focus on three strategies for addressing the gaps in our understanding:

—Predictive modeling and simulation of complex systems.

—Mathematical analysis of the behavior of complex systems.

—Using models of complex systems to inform policy makers. (This includes advancing the mathematics that supports risk analysis techniques for policy-making involving complex systems that include natural and engineered components, and economic, security, and policy consequences.)

While progress has been made in these areas since the 2008 report, further research is necessary to fully understand these systems and address our energy challenges.

DEPARTMENT OF ENERGY OFFICE OF SCIENCE

Activities within ASCR play a key role in supporting research that begins to fulfill the needs described above. Particularly critical programs include: the Applied Mathematics program, the Scientific Discovery through Advanced Computing (SciDAC) program, and programs to maintain the pipeline of the mathematical workforce. SIAM supports the $466 million requested for ASCR for fiscal year 2012. SIAM appreciates that the requested increase for fiscal year 2012 is more balanced among ASCR programs and not entirely directed to investments in computing hardware as it was in the fiscal year 2011 request. Without investments in algorithm research, software development, and partnerships between mathematicians, disciplinary researchers, and computer and computational scientists, we cannot realize the full benefit of new high-performance computers or effectively develop the next generation of such computers.

The applied mathematics and computational science and engineering work supported by the Applied Mathematics Program is a necessary element for many of the flagship efforts of the Office of Science and other units of DOE. Therefore, partnerships within the Department are critical for applying mathematics to key challenges in effective creation and use of a variety of energy sources. SIAM supports ASCR plans to initiate new partnerships with other DOE offices such as the Office of Electricity Delivery and Energy Reliability, the Office of Nuclear Energy, and the Office of Environmental Management. SIAM also supports the proposed activity on uncertainty and climate change within the Biological and Environmental Research Office, which will help to quantify the uncertainty in the predictions of current climate models, as well as the proposed activity on Computational Materials and Chemistry by Design within the Basic Energy Sciences Office.

SUPPORTING THE PIPELINE OF MATHEMATICIANS AND SCIENTISTS

Investing in the education and development of young scientists and engineers is a major step that the Federal Government can take to ensure the future prosperity and welfare of the United States. Currently, the economic situation is negatively affecting the job opportunities for young mathematicians—at universities, companies, and other research organizations. It is not only the young mathematicians who are not being hired who will suffer from these cutbacks. The research community at large will suffer from the loss of ideas and energy that these graduate students, postdoctoral fellows, and early career researchers bring to the field, and the country will suffer from the lost innovation.

Maintaining the pipeline of the mathematical workforce with programs that fund research and students is especially important because of the foundational and cross-cutting role that mathematics and computational science play in sustaining the Nation's economic competitiveness and national security, and in making substantial advances on societal challenges such as energy. DOE programs support the educational and professional development of the researchers who will, at universities, companies, and the national laboratories, tackle the research problems (such as the complex system modeling described above) needed to change energy usage in this country. These young mathematicians and computational scientists are the drivers and employees of the clean-energy economy.

Within the Office of Advanced Scientific Computing Research, the Computational Science Graduate Fellowship program is a highly successful and model program that enables students to receive robust training in mathematics and also learn to interface with a wide variety of other fields. We request that strong support for this program continue, as well as ongoing support for postdoctoral fellows at DOE national laboratories and universities. In addition, we endorse DOE's proposed continuation in fiscal year 2012 of the Office of Science Early Career Research Awards and Graduate Fellowships programs.

FISCAL YEAR 2011 APPROPRIATIONS

Before concluding, we want to make a brief comment on the resolution of appropriations for fiscal year 2011. The 18-percent cut proposed for the Office of Science for the remainder of fiscal year 2011 in H.R. 1 would devastate research that is critical for the country's energy and economic future while costing thousands of jobs at national laboratories and research universities across the country. SIAM urges you to provide at least the fiscal year 2010 level of funding for the Office of Science in fiscal year 2011.

CONCLUSION

The programs in the Office of Science, particularly those discussed above, are important elements of DOE's efforts to fulfill its mission. They contribute to the goals of dramatically transforming our current capabilities to develop new sources for renewable and low-carbon energy supplies and improve energy efficiency to ensure energy independence and facilitate DOE's effort to increase U.S. competitiveness by training and attracting the best scientific talent into DOE headquarters and laboratories, the American research enterprise, and the clean-energy economy.

We would like to conclude by thanking you again for your ongoing support of the DOE Office of Science and the actions you have already taken to enable DOE and the research and education communities it supports, including thousands of SIAM members, to undertake the activities that contribute to the health, security, and economic strength of the United States. The DOE Office of Science needs sustained annual funding to maintain our competitive edge in science and technology, and therefore we respectfully ask that you continue your support of these critical programs.

We appreciate the opportunity to provide testimony to the subcommittee on behalf of SIAM and look forward to providing any additional information or assistance you may ask of us during the fiscal year 2012 appropriations process.

PREPARED STATEMENT OF SOUTHERN COMPANY GENERATION

Mr. Chairman and members of the subcommittee: Southern Company operates the U.S. Department of Energy's (DOE) National Carbon Capture Center (NCCC) (http://nationalcarboncapturecenter.com) at the Power Systems Development Facility (PSDF) in Wilsonville, Alabama for DOE's National Energy Technology Laboratory (NETL) and several industrial participants.[1] The PSDF was conceived as the premier advanced coal power generation research and development (R&D) facility in the world and has fulfilled this expectation. NETL responded to the need for cost-effective carbon dioxide (CO_2) capture technologies by establishing the NCCC which is collaborating with technology developers world-wide in accelerating development of lower-cost CO_2 capture technology for application to coal-fueled powerplants.

I would like to thank the Senate for its past support of the NCCC and request the subcommittee's continued support of the DOE's Fossil Energy R&D core budget at recently enacted levels of $404 million per year. The Obama administration's fiscal year 2012 budget request of $291 million per year for DOE coal R&D is inadequate to provide the robust Fossil Energy program needed to enable development of a range of advanced technologies necessary to assure continued use of coal. At a time when our country's economy is recovering, we need to assure continued utilization of domestically produced, low-cost, coal-based power generation. DOE's Fossil Energy R&D efforts have produced significant results to advance coal-based power. DOE's core R&D budgets, combined with investments by the private sector assure a sustainable technology base on which to address the environmental and economic challenges facing continued coal utilization. The continued operation of the NCCC in partnership with DOE will benefit the Nation by responding to the need for developing cost-effective CO_2 capture technology for coal-fueled power generation by teaming with technology developers funded through the DOE Fossil Energy program and accelerating the progress of those technologies toward commercial deployment by testing and evaluation at the NCCC.

The NCCC offers a flexible applied R&D test facility which provides commercially representative flue gas and syngas and the necessary infrastructure in which developers' technologies are installed and tested to generate data for performance verification under industrially realistic operating conditions. This effort can bridge gaps between fundamental R&D and large-scale commercial demonstration and pro-

[1] Current PSDF participants include Southern Company, the Electric Power Research Institute (EPRI), American Electric Power, Luminant, NRG, Peabody Energy, Arch Coal, Inc., and Rio Tinto.

vides for a seamless transition for promising CO_2 technologies to migrate from laboratory into commercial applications. The DOE program for CO_2 capture in coal-fueled powerplants is divided into three areas:

—postcombustion capture for conventional pulverized coal plants;
—pre-combustion capture for coal gasification powerplants; and
—oxy-combustion processes which produce a more CO_2-rich flue gas than conventional combustion for easier CO_2 capture.

The NCCC's CO_2 capture efforts address all three areas.

Southern Company also supports the goals of the Clean Coal Technology Roadmaps developed by DOE, EPRI, and the Coal Utilization Research Council (CURC). These Roadmaps identify the technical, economic, and environmental performance that advanced clean-coal technologies can achieve over the next 20 years. Over this time period, coal-fired power generation efficiency can be increased to more than 50 percent (compared to the current fleet average of ~32 percent) while producing de minimis emissions and developing cost-effective technologies for CO_2 management.

SUMMARY

The United States has historically been a leader in energy research. Adequate funding for fossil energy research and development programs, including environmental and climate change technologies will provide our country with secure and reliable energy from domestic resources while protecting our environment. Current DOE Fossil Energy Research and Development programs for coal, if adequately funded, will assure that a wide range of electric generation options are available for future needs. The Congress faces difficult choices when examining near-term effects on the Federal budget of funding energy research. However, continued support for advanced coal-based energy research is essential to the long-term environmental and economic well being of the United States. Prior DOE clean-coal technology research has already provided the basis for $100 billion in consumer benefits at a cost of less than $4 billion. Funding the administration's budget request for DOE coal R&D and long-term support of the Clean Coal Technology Roadmap can lead to additional consumer benefits of between $360 billion and $1.38 trillion.[2] But, for benefits to be realized, the critically important R&D program in the Clean Coal Technology Roadmap must be conducted.

One of the key national assets for achieving these benefits is the NCCC. The fiscal year 2012 funding for the NCCC needs to be about $45.4 million to operate (and modify as needed) the facilities to test technologies that are critical to the goals of the DOE Carbon Sequestration Technology Roadmap and to the success of the development of cost-effective climate change technologies that will enable the continued use of coal to supply the Nation's energy needs. Any budget cuts (for example from $404 million to $291 million per year) in the DOE Fossil Energy Core R&D budget could proportionately impact the NCCC. A key feature of the NCCC is its flexibility to test new carbon capture technologies for coal-based power generation systems in an integrated fashion. The NCCC can evaluate solvent, sorbent, and membrane CO_2 capture technologies as they are integrated into actual syngas (from gasification) or flue gas from actual powerplant operations. Integrated operation allows the effects of system interactions, typically missed in un-integrated, laboratory-based, component development programs, to be understood. Testing at the NCCC allows the maintenance, safety, and reliability issues of a technology to be investigated at a cost that is far lower than the cost of commercial-scale testing. The NCCC is large enough to produce data to support commercial-scale demonstration plant designs, yet small enough to be cost-effective and adaptable to a variety of technology research needs. Moreover, by operating a unique, but central R&D test facility, available to all CO_2 technology developers, redundancy in testing sites and equipment is minimized and cost-effective use of R&D funds is achieved. The major accomplishments at the NCCC/PSDF to date and the current test program planned by DOE and the NCCC's industrial participants are summarized below.

PRIOR ACCOMPLISHMENTS

The PSDF test-bed has operated successfully for many years in support of DOE's advanced coal program. The two significant achievements were in a gasifier suitable for use with low-rank fuels, and hot gas filtration to improve energy efficiency. These two technologies have progressed to commercialization with integrated gasification combined cycle (IGCC) powerplant being built at Kemper County, Mississippi, and Dong Guan, China. Skilled staff from disciplines essential for a successful re-

[2] EPRI Report No. 1006954, "Market-Based Valuation of Coal Generation and Coal R&D in the U.S. Electric Sector", May 2002.

search program has gained experience by designing and operating the test equipment and by working with vendors to develop and improve their technologies. The NCCC/PSDF has developed testing and technology transfer relationships with more than 50 vendors to ensure that test results and improvements developed at the NCCC/PSDF are incorporated into future plants. In some instances, testing has eliminated technologies from further consideration. Such screening is valuable in that it concentrates R&D effort on those technologies most likely to succeed and is an essential part of managing the DOE's financial resources. Major subsystems tested and some highlights of the test program at the NCCC/PSDF include:

—the transport reactor;
—Advanced particulate control systems;
—Filter Safe-Guard Device; and
—Coal feed and ash removal subsystems:
  —Syngas cooler enhancements; and
  —Sensors and controls automation improvements.

These components were integrated into a Transport Integrated Gasification (TRIG™) system and successfully tested at the NCCC/PSDF. The TRIG™ process is now being scaled-up for commercial deployment. However, the pilot-scale test components remain in place and form the basis of a highly flexible, unique testing infrastructure to enable pre-combustion (i.e., Gasification based) CO_2 capture technologies to be evaluated.

NATIONAL CARBON CAPTURE CENTER CURRENT TEST PROGRAM

Building on success with TRIG™, the NCCC/PSDF facility has now refocused its mission on supporting the development and scale-up of cost-effective, commercially viable carbon capture technologies for coal-fueled powerplants through collaboration with the DOE and third-party technology developers. Most of the current CO_2 capture technologies are being developed at laboratory- or bench-scale under ideal conditions. Continued R&D under realistic field conditions are needed to validate laboratory results and identify technical issues that are not present under ideal conditions. In collaboration with technology developers, the NCCC makes available coal-derived syngas and flue gas to carry out applied R&D on components or small pilot-scale systems to bridge gaps between fundamental R&D and large-scale commercial demonstration and provides for a seamless transition for promising technologies to migrate from laboratory into commercial applications.

The NCCC is a unique applied R&D test facility that consists of two major sets of infrastructure to support CO_2 capture technology development. One is the existing pilot-scale coal gasification facility that produces syngas for pre-combustion CO_2 capture technology evaluation and the other is the newly constructed Post-Combustion Carbon Capture Center (PC4) which enables testing of capture technologies on flue gas from an adjacent pulverized coal powerplant. Both are readily adaptable to test a variety of technologies at multiple scales, providing data for scale-up to commercial applications. This flexibility in conjunction with real-world operating conditions, allows the NCCC to support developers in advancing the CO_2 capture technologies that are critical to continued use of coal for power generation. Jointly with the DOE, NCCC has developed a Technology Screening Process which is a key evaluation tool to assess and prioritize technologies for testing at the facility. This process also ensures that final technology selection will form a balanced portfolio that promotes the advancement of both near-term and long-term candidate technologies.

Postcombustion.—Today's postcombustion capture technology is estimated to increase the cost of electricity (COE) by up to 80 percent.[3] For both new and existing powerplants, postcombustion capture technology must be made more efficient and cost-effective by reducing parasitic power and capital cost requirements. In postcombustion capture, CO_2 is separated from the flue gas in a conventional coal-combustion powerplant downstream of the pulverized coal boiler. Many postcombustion capture technologies need to be proven and integrated in an industrial powerplant setting. Activities at the NCCC for postcombustion capture technology include:

Post-Combustion Carbon Capture Center.—This test facility is being built to accommodate tests of a wide-range of capture technologies from flue gas. The test facility includes three major test areas:

—a pilot solvent test unit to test developers' next-generation CO_2 absorption solvents;

[3] "Cost and Performance Baseline for Fossil Energy Plants, Volume 1: Bituminous Coal and Natural Gas to Electricity, Final Report"; NETL, May 2007.

—a second test bay to support evaluation of fully integrated test systems supplied by technology developers; and

—a bench-scale test area to accommodate up to four small test skids of emerging, advanced technologies such as sorbents or membrane systems.

Pilot Solvent Test Unit.—This facility is designed and construction and commissioning were recently completed. Testing is underway with a reference solvent and will begin later this year on alternative advanced solvents with potential improvements in loading capacity, kinetics, or lower heats of regeneration.

Advanced Technology.—Compact membrane contactors and solid phase CO_2 sorbents, currently being investigated by DOE–NETL and private companies, will be assessed and installed. NCCC will provide such technologies a scaled-up testing platform as development progress warrants.

Pre-Combustion.—In pre-combustion capture, CO_2 is separated from the syngas produced by a coal-gasification process, prior to the combustion of the syngas in gas turbine for power generation. CO_2 capture for IGCC is estimated to increase COE greater than 35 percent.[3] Reducing parasitic power and capital cost requirements is also needed for development of efficient and cost-effective pre-combustion technology. R&D activities at NCCC for pre-combustion capture technology for application to gasification-based power generation include:

Advanced CO_2 Capture Systems.—New solvents and gas-liquid contacting devices are being assessed on syngas. New CO_2 separation technologies (sorbents or membranes) are being scaled-up and tested based on fundamental R&D progress by third-party developers.

Water Gas Shift Enhancements.—Water Gas Shift (WGS) catalyst test results have been conducted which reveal that parasitic steam consumption can be reduced, which in turn increases the net power output of an IGCC plant and reduces COE with CO_2 capture. Results have been supplied to catalyst suppliers and findings are being implemented at a commercial IGCC plant currently under construction. Testing of various WGS catalysts will continue.

Advanced Syngas Cleanup.—New advanced syngas cleanup systems are being tested for reducing hydrogen sulfide, hydrochloric acid, ammonia, and mercury to near-zero levels.

Oxy-Combustion.—The NCCC is also evaluating the potential benefits of oxy-combustion CO_2 capture using the pressurized transport reactor operating in oxygen combustion mode. Preliminary screening studies have been conducted with favorable results. Detailed system studies, modeling, and additional economic analysis are being conducted to evaluate the commercial feasibility of this technology.

Gasification.—In developing a cost-effective advanced coal powerplant with CO_2 capture, all process blocks within the powerplant must be optimized in addition to the capture block. Including CO_2 capture in an advanced coal powerplant will increase the plant COE, so opportunities to reduce cost in every part of the process will be explored. With highest priority being given to low-cost CO_2 capture process development, projects that reduce overall capital and operating costs will also be included in the NCCC test plan to partially offset incremental cost increases from CO_2 capture addition. These cost reduction projects include technology development for syngas cleanup, particulate control, fuel cells, sensors and controls, materials, and feeders.

CONCLUSION

The collaboration among DOE Fossil Energy core R&D, technology developers, and private industry supported National Carbon Capture Center is making great strides toward advancing the next generation of CO_2 capture technologies. These technologies hold the promise of reducing the costs of CO_2 capture to levels necessary to assure that affordable, reliable coal-based electric power can be produced for America's economy, while also meeting all of the environmental challenges associated with coal use. The Congress should sustain the DOE Fossil Energy R&D budgets at historical levels.

PREPARED STATEMENT OF SYMBIOTICS

On behalf of America's independent power producers and hydropower developers, I respectfully request the full appropriation in fiscal year 2012 of funds authorized in section 242 and section 243 of the Energy Policy Act of 2005 (Public Law 109–58). Full funding for the Hydroelectric Production Incentives and Hydroelectric Efficiency Improvements authorized in Public Law 109–58 is critical for getting new hydropower projects into production.

Currently, there are numerous projects across the United States that are under construction, or nearing the construction phase, that would be eligible to receive these important incentives if they are appropriated for fiscal year 2012. These projects need the incentives to remain competitive for private financing. Without these production and efficiency incentives, many of the projects under development will become uneconomical and may never be built.

As you may know, the provisions in section 242 and 243 of the Energy Policy Act of 2005 were critical in facilitating the financing necessary to make many hydroelectric projects economically feasible while pursuing the permitting processes. The subsequent appropriation of these funds would enable developers across the country to complete their projects. This would allow for the production of clean electricity that would be more cost effective than other forms of renewable energy including wind and solar. Furthermore, it would help our Nation achieve energy independence and foster significant new job creation.

Since passage of the Energy Policy Act of 2005, appropriation of section 242 and 243 funds was unnecessary because no projects existed that were capable of utilizing them. Now, hydropower developers and producers are far enough in the development process that these funds could be used. In fact, the hydropower projects that are currently being developed represent the first new nonmunicipal hydro projects to come on line in more than two decades. Full appropriation of section 242 and 243 funds would provide the critical assistance to get these vital projects into production.

Symbiotics appreciates the opportunity to submit testimony for the record.

PREPARED STATEMENT OF TECHNOLOGY INTERNATIONAL, INC.

The development and acceptance by the industry of technology development designed to minimize drilling risks needs to be supported by the United States Government to assure the safety of offshore drilling, especially in the deep water Gulf of Mexico.

Surface seismic surveys provide the initial reservoir information for well planning deepwater wells. Seismic techniques are increasingly being developed to better image potential drilling hazards, such as unstable shallow gas pockets and abnormal high pressures ahead of the bit using so-called "look-ahead" seismic. Accurate, high-resolution seismic data often are not available for critical deepwater development projects because of inherent limitations of surface seismic technology and difficulties in getting an accurate characterization of formations where salt layers are present. Using borehole seismic technology throughout the drilling process can play an important role in generating more accurate, higher-resolution seismic data for reducing the often substantial risks and uncertainty associated with deepwater drilling.

Borehole seismic systems with a surface noise source and a downhole receiver are currently commercially available. However, these systems are expensive, cumbersome to deploy, have difficulty working in a salt environment, they do not provide the ability to "look ahead of the drill bit", and the information available at the surface for real-time decisionmaking is constrained by the bandwidth of the measurement while drilling communications link, making this type of seismic while drilling (SWD) less practical in deep Gulf of Mexico applications. SWD with a downhole noise source, currently not available, could effectively overcome these limitations. Seismic while drilling would help reduce uncertainty and risk, and improve safety in the deepwater well construction process.

A workshop sponsored by the Department of Energy (DOE) funded Research Partnership to Secure Energy for America (RPSEA) included invited 125 industry experts, selected based on their individual technical qualifications. The workshop was held on July 22, 2010, at the Houston Area Research Council facility in Houston, where a diverse group of technologies that would help minimize drilling risks were identified and evaluated. Afterwards, a poll was taken of the workshop participants to identify those technologies that would be of greatest value for Gulf of Mexico drilling in deep water and should be the industry's highest priority. Two areas selected as highest priority to prevent another Gulf of Mexico well blowout were early detection of gas influx and better SWD data. Looking ahead of the bit, SWD using a downhole source is practical, and will, after sufficient funding becomes available, provide real-time seismic images used to accurately determine pressures ahead of the drill bit. The availability could be accelerated if DOE were to provide "emerging technology funding" to RPSEA to make "look ahead" seismic technologies available to the deepwater operators within 12–18 months.

PREPARED STATEMENT OF THE UNIVERSITIES RESEARCH ASSOCIATION, INC.

Chairman Feinstein, Ranking Member Murkowski, members of the subcommittee, on behalf of Universities Research Association, Inc. (URA), I appreciate this opportunity to comment on the administration's fiscal year 2012 budget submission for the Department of Energy (DOE). URA, a nonprofit organization comprised of 86 member universities, serves together with the University of Chicago through the Fermi Research Alliance, LLC, as the DOE contractor for the management and operation of the Fermi National Accelerator Laboratory (Fermilab). I write to express our grave concern for the future of fundamental research in the physical sciences in light of the proposed 2012 budget.

Scientific research is critical to innovation, which is fundamental to job creating, economic growth, and global competitiveness. Studies have demonstrated unequivocally double-digit percent returns on the Nation's investments in fundamental discovery research. Once in an unquestioned lead role across all fields of research, we now face significant competition from other countries, like China, that have understood the importance of investment in science and technology for economic growth.

The President continues to place a priority on DOE in his fiscal year 2012 budget request, proposing $29.5 billion which represents an increase of $3.1 billion (11.8 percent) more than the fiscal year 2010 enacted level. Within the President's proposed overall freeze on nonsecurity discretionary spending, this is a significant commitment by the administration. For DOE, as the Nation's premier funding agency for the physical sciences, it is welcome news that the President proposes $5.42 billion for the basic research carried out by the DOE Office of Science. The President would increase funding for fundamental research by about 9 percent more than the fiscal year 2010 level.

However, the lack of balance within the research programs of the Office of Science is troubling. For example, the President proposes a 24-percent funding increase for the Office of Basic Energy Sciences; a 22-percent increase for the Office of Biological and Environmental Research; and a 21.5-percent increase for Advanced Scientific Computing Research. In contrast, High Energy Physics is essentially frozen at the fiscal year 2010 enacted level ($797.2 million, an increase of $6.4 million or 0.8 percent), and Fusion Energy Sciences is reduced below the fiscal year 2010 funding request to $399.7 million (a reduction of $18 million or 4.3 percent).

This is a particularly critical time for High Energy Physics as Fermilab, the Nation's only national laboratory devoted to research in particle physics, transitions from the highly successful running of the Tevatron Collider to new projects at the Intensity Frontier of particle physics. The Tevatron will shut down at the end of fiscal year 2011, as originally planned, now that the Large Hadron Collider in Europe has become the focus of research at the Energy Frontier. Fermilab is ready to begin new experiments that will put the United States at the forefront of studies of neutrinos, a key area of study to understand the Standard Model and how the universe began. The delay in completing the fiscal year 2011 appropriations bills, in turn, has delayed the start of the new undertakings critical to the future of the laboratory.

High Energy Physics has blazed the path of international cooperation on large scientific projects with scientists collaborating on the planning, design, construction, and operation of facilities all over the world. The field hosts thousands of researchers each year at the various experiments and serves as a premier training ground for American university students to develop the next generation of scientists, engineers, and technicians to carry out discovery science and innovation. High Energy Physics, and Fermilab in particular, has long reached out to K–12 students to engage their interest in the science, technology, engineering, and mathematics fields, which are important to the future economic competitiveness of the Nation.

The America COMPETES Act, reauthorized by the Congress only this past December, affirms a bipartisan commitment to double the science budgets of DOE and the National Science Foundation over the next 10 years. The current budget situation is indeed critical. But the growth, prosperity, and employment increase needed to deal with it over the long term are not achievable without the vibrant economy made possible through the innovation and research in which the physical sciences play a key role.

As a university-based organization in partnership to operate and manage Fermilab, we urge the subcommittee to support funding for High Energy Physics within an overall balanced research program in the basic physical sciences within the Office of Science. We urge that the subcommittee approve, at a minimum, the President's request for High Energy Physics and specifically that it approve the $56 million associated with the planned new experiments at Fermilab.

PREPARED STATEMENT OF THE UNIVERSITY CORPORATION FOR ATMOSPHERIC RESEARCH

On behalf of the University Corporation for Atmospheric Research (UCAR) and the university community involved in Earth sciences research and education, I submit this written testimony for the record of the Senate Committee on Appropriations, Subcommittee on Energy and Water Development. UCAR is a consortium of 76 research universities that manages and operates the National Center for Atmospheric Research (NCAR) on behalf of the National Science Foundation and the university community.

This Nation must deal with critical national and global energy challenges. At a time when we need more research, technological innovation, and solutions, I am deeply troubled by the level of cuts that the U.S. House of Representatives has proposed for DOE in fiscal year 2011, especially the truly destructive cuts proposed for the DOE Office of Science (DOE OS), whose basic research is among the most valuable and cross-cutting in the world. While I understand that the Congress faces difficult budget choices in reining in a growing deficit, it would be a mistake for the Congress to balance the budget on the back of DOE's research and development. I urge the subcommittee to fund the fiscal year 2012 budget request for the DOE OS at $5.42 billion and the Office of Energy Efficiency and Renewable Energy (EERE) at $3.2 billion.

DOE programs and initiatives in science and education directly support university and laboratory communities, funding the work of preeminent scientists in our field. Without DOE support, our capacity to understand and advance numerous fields of science, including the atmospheric sciences, would be seriously compromised. DOE is central to the country's economic and technological world leadership and to our ability to secure an economically and environmentally sustainable future for ourselves and our children. This is why the bipartisan National Commission on Fiscal Responsibility and Reform recommended that, even amidst major agency spending cuts, the Nation must continue to "expand high-value research and development in energy and other critical areas".

With the following, I highlight several science research and education programs that represent DOE's critical contributions to American leadership in science and technology.

CLIMATE AND EARTH SYSTEM SCIENCES

The Office of Biological and Environmental Research (BER) within DOE OS makes fundamental contributions to the Nation's premier Earth system models and data analysis infrastructure that provide the scientific foundation for future decisionmaking on environmental change. Without them we would not know the level of risk that cities, States, and businesses face from long-term weather trends and what societal preparation and adaptation might be needed.

In particular, BER provides indispensable support to the Community Earth System Model (CESM), a joint DOE–NCAR effort that is a comprehensive and sophisticated model for analyzing Earth's past, present, and future. CESM is a major contributor to national and international assessments of environmental change. And while CESM is housed and managed at NCAR, it is an open-source climate model, involving scientists across the Nation and around the world in making contributions and improvements.

Thanks in part to BER support, CESM and the Nation's other climate models are becoming more realistic, incorporating more precise and complex natural and human processes that are shaping the global climate. For example, the Climate Science for Sustainable Energy Future program, a joint effort between NCAR and DOE's Lawrence Berkeley Laboratory, is embedding the socioeconomic and energy technology components of integrated assessment models into the CESM model in order to better understand how the planting of biofuel crops will affect the atmosphere, soil, water, and agriculture. These new capabilities will allow the climate science community to address societally relevant questions in a way that has not been possible in the past.

New in fiscal year 2012, BER-supported scientists will study methods to rapidly integrate new sub-models, datasets, and other model components into global Earth system models. Another focus will be enabling Earth system models to effectively use future computer architectures, such as the new IBM Blue Gene/Q being commissioned at Argonne National Laboratory. BER scientists will also expand arctic climate research activities and develop new observation capabilities for clouds, aerosols, and the terrestrial carbon cycle in this globally important and climatically sensitive region. A new Atmospheric Radiation Measurement Climate Research Facility site to be developed in the Azores will provide critical long-term observations

for marine clouds and aerosols. Such new research efforts strengthen existing BER atmospheric process studies and modeling and are critical for the advancement of this scientific field.

In order to develop more accurate, increasingly realistic, and higher-resolution Earth system models, with better environmental predictive capabilities for businesses and communities, I urge you to fund BER within the DOE OS at the requested $717.9 million for fiscal year 2012.

ADVANCED SCIENTIFIC COMPUTING RESEARCH

Also within DOE OS, Advanced Scientific Computing Research (ASCR) delivers leading-edge computational and networking capabilities to scientists nationwide, enabling advances in computer science and the development of specialized software tools necessary to answer major scientific questions being addressed by OS and the larger university community.

ASCR's continued progress is of particular importance to atmospheric scientists involved with Earth system model development. Representing the complex processes and interactions of the Earth's systems, while efficiently harnessing the enormous amount of computing power necessary, requires very advanced software engineering, computer science, and numerical techniques. Because the climate simulations using the CESM (described above) are too computationally intensive to be run at NCAR alone, they are outsourced to the DOE's Leadership Computing Facilities. At Oak Ridge National Laboratory, a new 2.33 petaflop system is available to the scientific community, and Argonne National Laboratory (ALCF) has proposed building a 10 petaflop IBM Blue Gene/Q supercomputer next year. The fiscal year 2012 request supports continued operations of existing supercomputing systems as well as the new ALCF 10 petaflop system.

DOE's computing capacity is essential to the country. Each major upgrade unlocks reams of new detail and data on the characteristics of our current and future Earth system. A failure to maintain and continue to upgrade these Leadership Computing Facilities would seriously undermine the steady progress of the scientific enterprise in this area.

The results of this research and other research like it are brought to the broader scientific community through the Scientific Discovery through Advanced Computing (SciDAC) program. SciDAC facilitates the transfer of basic research into computational science applications through direct partnerships between applied mathematicians and computer scientists.

I urge you to fund ASCR within DOE OS at the President's full fiscal year 2012 budget request of $465.6 million.

WORKFORCE DEVELOPMENT FOR TEACHERS AND SCIENTISTS

DOE OS's education programs, such as the Workforce Development for Teachers and Scientists (WDTS) program, are essential to maintaining U.S. leadership in science, technology, engineering, and mathematics (STEM). WDTS supports, educates, and trains the Nation's STEM workforce and facilitates the development of the knowledge and expertise that will prepare us to address future energy and environmental challenges.

WDTS has launched the DOE OS Graduate Fellowship Program to support U.S. graduate students pursuing degrees in areas of basic science and engineering. The goal of the program is to encourage talented students to pursue research-focused graduate studies in physics, chemistry, biology, mathematics, computer science, engineering, and environmental science.

Programs like WDTS have produced tens of thousands of leading scientists, engineers, and technicians who have dedicated their careers to working on the great challenges of the day, including climate change, while pursuing answers to many of the most important scientific questions in physics, chemistry, biology, environmental and atmospheric science, and other areas of basic science. Their work will be critical to our Nation's continued leadership in the 21st century.

I urge you to fund the WDTS program within the DOE OS at the President's full fiscal year 2012 budget request of $35.6 million.

RENEWABLE ENERGY RESEARCH AND DEVELOPMENT

Federal investment in the scientific research and technology development involved with renewable energy is one of the most important investments we can make in our Nation's future and our ability to build resilience to economic and environmental challenges. Renewable energy conveys numerous cross-cutting benefits to society, including reducing our dependence on foreign oil, driving innovation in the energy economy, decentralizing the energy market, providing new high-tech jobs, re-

ducing the human toll on the environment, and improving air quality and public health outcomes.

Our national research universities, along with DOE laboratories and an emerging private sector, are driving the country's growth in renewable energy and increasing the efficiency of new technologies. One example of such collaboration includes an expanding NCAR partnership with DOE's National Renewable Energy Laboratory and the regional utility company, Xcel Energy, to develop sophisticated wind energy forecasts for operational use. These provide critical information to select the most productive locations for new wind turbine farms, better integrate wind-generated electricity into the power grid, and make critical decisions about powering down traditional coal- and natural gas-fired plants when sufficient winds are predicted. To reduce the costs of integrating wind and solar energy into the electrical grid and to make renewable energy more cost effective, significant improvements in weather forecasting technologies are required and additional weather observations are needed in the lower atmosphere.

Given the critical importance to the Nation of developing economically and environmentally sustainable technologies for producing energy, I urge the subcommittee to fully fund the fiscal year 2012 budget request of $3.2 billion for EERE.

I want to thank the members of the subcommittee in advance for supporting, through DOE, basic and cutting-edge scientific research and for promoting education and workforce development in the environmental and other Earth sciences. By doing so, you are advancing the Nation's economic recovery and sustaining our global scientific leadership.

PREPARED STATEMENT OF WEST VIRGINIA UNIVERSITY

This testimony is submitted on behalf of West Virginia University on topics including fossil energy coal, oil, and natural gas research and development programs; Office of Electricity Programs; and new initiatives. In our testimony, we make the following recommendations for fiscal year 2012 appropriations:

—Restore the fuels program to $20 million for coal conversion research.
—Restore the fuel cells program to $50 million.
—Support both modeling and simulation, and experimental research programs for coal systems.
—Restore funding for oil and natural gas programs, and increase budget to $80 million.
—Do not repeal section 999 program in Energy Policy Act (EPAct) 2005.
—Maintain core Coal Research Program at $404 million.
—Initiate programs in water availability, energy security, and rare earth minerals.

INTRODUCTION

Both the Department of Energy (DOE) Strategic Plan and the DOE Quadrennial Technology Review Framing Document cite a projected long-term dependency of our Nation on fossil fuels for electric power and transportation fuels. Time frames of 25 years and longer are considered in these projections. It is imperative that the United States place strategic importance on the use of our Nation's coal, oil, and natural gas resources to meet our energy needs. This testimony is directed toward key programs in coal, oil, and natural gas research.

FUELS PROGRAM

Consider transportation fuels. Patrolling oil transit routes adds an estimated $80 billion annually to our defense costs. In 2008, we spent $388 billion on imported petroleum products, 57 percent of our balance-of-trade deficit. Production of liquid transportation fuels from a mixture of 60-percent coal and 40-percent biomass could provide 3 million barrels per day of gasoline equivalent by 2020. A coal-plus-biomass fuels program would create new jobs through increased coal production that could reach to upwards of 50 percent from our current levels. Coal-to-liquid plants located in widely dispersed geographic locations would support additional jobs and reduce the risks of supply interruptions from events such as major hurricanes in the Gulf of Mexico. These plants would bolster our national, energy, and economic security through utilizing and producing indigenous fuels. Coal-plus-biomass fuels meet the requirements of the Energy Policy Act of 2007 regarding their CO_2 footprint, compared to conventional petroleum, and have been shown to be net sinks regarding CO_2 emissions (National Academy of Sciences, 2010).

We recommend restoring funding for the fuels program to a level of $20 million for coal conversion research using feedstocks such as coal and biomass for the production of liquid transportation fuels, chemicals, and synthetic natural gas. Funding should be directed toward simulation modeling and pilot plant testing on eastern, mid-content, and western coals, biomass characterization and feeding, and transformational research to reduce the energy penalty costs of conversion processes and plant capital costs, which are currently a deterrent to building a coal fuels and chemicals industry.

FUEL CELLS PROGRAM

Solid oxide fuel cells (SOFC) operating on coal-based syngas can form a key component of the administration's goal of having 80 percent of our Nation's electricity generated by clean-energy technologies. SOFC technology can be deployed in both central station and distributed generation modes. A successful collaboration of government and industry under the Solid State Energy Conversion Alliance (SECA) is reducing the cost of SOFC. The SECA fuel cell program is a critical element of fossil energy's technology portfolio. Integrated gasification fuel cell (IGFC) systems are highly efficient with near-zero atmospheric emissions of CO_2 and air pollutants, and use minimal amounts of water compared to traditional pulverized coal power generation systems. We disagree with the administration's recommendation to defund the fuel cell program and recommend continuation at a level of $50 million.

MODELING AND SIMULATION

The emphasis on computational modeling in the DOE program is attractive for evaluating new concepts at scales ranging from molecular interactions through system simulations. Information gained from modeling will be useful in moving new concepts from scientific research discoveries into scalable component technologies, with added benefits of attendant time and cost savings afforded by performing numerous inexpensive computer experiments versus numerous costly laboratory experiments. However, experimental research is an integral part of modeling and simulation in that experimental data are essential for validating the predictions of model studies. Modeling is also useful in directing attention to targeted areas where further engineering research is needed to solve operational problems. With successful modeling, we can reduce development times for scaling up promising technologies by factors of 10-to-15, versus a more conservative scale-up program in which the size of the system is increased by factors of 3-to-5, for example.

Industrial research often discovers unanticipated mechanisms in pilot and commercial-scale field research on actual systems that are not/cannot be predicted from modeling alone or laboratory-scale research. It is essential that the DOE Coal Program continues to support pilot-scale and commercial-scale experimental and demonstration research to allay the valid concerns of technology developers who must invest billions of dollars to prove the cost and performance viability of new systems. Close collaboration between computer modelers and industrial developers is recommended to ensure the effective use of funding in both the modeling and experimental aspects of developing and deploying new technologies.

OIL AND NATURAL GAS PROGRAMS

We recommend restoration of the Oil and Natural Gas Programs in the Office of Fossil Energy at a funding level of $80 million for fiscal year 2012. We further recommend maintaining the program on offshore and unconventional onshore oil and natural gas research funded under section 999 of the EPAct.

Shale Research.—National Energy Technology Laboratory (NETL)-developed technologies for directional drilling and hydraulic fracturing of formations can be applied to produce the plentiful natural gas reserves of the Marcellus and similar shale formations. Much work remains to be done, however, to validate estimates of how much gas can be recovered, to develop the geological sciences needed to understand these underground reservoirs, to effectively treat produced water, to protect groundwater supplies, and to allay the concerns of residents affected by drilling and fracking operations. We recommend that $40 million be directed to shale gas research programs and to related technology transfer programs to provide information on environmentally safe drilling practices. The Utica shale formation is also a national resource for which little is known and research on this formation is also recommended. With the administration's focus on using natural gas for transportation fuels in addition to current markets for chemicals production and home applications, it is necessary to ensure adequate supplies of natural gas since existing wells will deplete at approximately the same rate that Marcellus shale production is increasing, according to Environmental Protection Agency projections.

Oil Research.—Funding of $25 million is recommended for advanced oil research to support programs such as the large-scale storage of carbon dioxide in enhanced oil recovery applications, and the development of new resources such as the Baaken shale and similar formations that are now commercially viable, which is accredited to the new drilling technologies. Research should be directed toward pilot tests, noncore studies, and advanced research and development for next-generation technologies.

Methane Hydrates Research.—The remaining $15 million in our recommendation should be directed toward continuation of the methane hydrates program within the Office of Fossil Energy. This resource is extensive and will provide a needed supplement to our natural gas resource base if it can be successfully developed.

Section 999 Program.—DOE Secretary Chu recently met with the Federal Advisory Committee Act committee providing guidance to the section 999 Offshore and Unconventional research program funded by royalties from offshore production of oil and natural gas. He asked that the program direct some of its activities to ensuring the safety of offshore drilling operations to avoid events such as the Macondo well accident of the past year. The section 999 program also provides support for small operators by funding collaborative research with national universities and for technology transfer programs. The past and present administrations have recommended that this program be repealed. We request support of the subcommittee in not repealing this program, especially in view of the need for increased safety in offshore drilling operations.

CORE FOSSIL ENERGY SCIENTIFIC RESEARCH PROGRAMS

The United States needs a strong core program of scientific research in fossil fuels. We recommend maintaining the core Coal Research Program at $404 million annually in addition to supporting the oil and natural gas program at the $80 million level discussed above.

Fossil fuels are mainstays of our national energy demand for the foreseeable future. Our economic prosperity and national security are linked through investment in scientific research. More than one-half of our economic growth since World War II can be traced to science-driven technological innovation. Today's investments in fossil energy research will lead to tomorrow's discoveries that will build a better America.

NETL, as a fossil energy field laboratory, has a long history of support for external entities such as industry and universities. As a national laboratory, NETL must also increase its level of program support for onsite scientific research. Significant past accomplishments include the drilling technologies described above and materials developed to reduce criteria pollutants from coal-based power systems. Present activities include developing excellence as a computational modeling and simulation center and serving as a regional engine for economic development through programs with local universities to stimulate advanced research that leads to spin-off industries under programs such as the Regional University Alliance (RUA). Within the funds provided, NETL should be encouraged to continue these scientific research and economic development programs.

Core research programs should be expanded through the designation of additional funding to include an enhanced focus on water-related issues. Ground water contamination from Marcellus shale production can be addressed under the Oil and Natural Gas Programs described above. Additional funding should be identified to address a broader array of water issues associated with energy production. Powerplants need to reduce the amount of water both used and consumed in their operations. These needs are especially acute in areas of water shortages, such as the arid Western States. Production of fuels and chemicals will require additional water supplies. Coal conversion plants in China are producing liquid transportation fuels at a ratio of three barrels of water per barrel of fuel, a level we can attain in the United States through the investment of core research funds.

ENERGY SECURITY

Fossil energy contributes approximately 70 percent of the electricity to the national grid. We recommend the programs in the Office of Electricity Delivery and Energy Reliability (OE) include components addressing the role of fossil energy in maintaining energy supply. Analytical tools should be developed to monitor energy supply and reduce risks from upsets in the fuel supply chain and energy production infrastructure. The role of the Office of Fossil Energy in the Future Smart Grid should be integrated into planning and analysis activities. Programs currently at NETL in areas such as energy efficiency of appliances can be used as a base to develop the next generation of "smart grid ready" appliances. We recommend an en-

hancement of the Office of Fossil Energy's role in energy security areas, given its expertise in these areas.

RARE EARTHS

Advanced materials will increasingly rely on rare earth elements. The Office of Fossil Energy has a long history of extraction expertise, tracing back from its origins as a part of the U.S. Bureau of Mines, and its work in coal cleaning and advanced separations technology that can be applied to helping ensure a supply of rare earth minerals through improved recovery and processing technologies. We recommend that the DOE engage the Office of Fossil Energy in programs to maintain our supply of rare earth elements.

PREPARED STATEMENT OF WILKES UNIVERSITY, COLLEGE OF SCIENCE AND ENGINEERING

I am writing to provide support and a recommendation for the Subcommittee on Energy and Water Development to fund a Department of Energy (DOE) research program on Potential Impacts of Hydraulic Fracturing and Shale Gas Development on Drinking Water Resources and Environmental Systems (e.g., streams and rivers). I am an aquatic ecologist and Dean of the College of Science and Engineering at Wilkes University (Wilkes-Barre, Pennsylvania). In the interest of transparency, I also need to point out that I am a principal investigator on a 1-year water quality research project with DOE National Energy Technology Laboratory (NETL), Morgantown, West Virginia, at will be addressing short-term (1 year) concerns regarding surface water quality, watersheds, and aquatic ecology relative to selected sites and Marcellus gas development in northeastern and northcentral Pennsylvania; our project will also provide information based on the best science to the people in the region.

It should be noted that I am not opposed to shale gas development in Pennsylvania (or elsewhere), but do believe this development needs to proceed with the necessary protection of public health and environmental safeguards for natural resources that are important to the State economy and quality of life (hunting, fishing, boating and canoeing, recreational use of natural areas, tourism, etc.). These safeguards of environment and public health must be based on good science (i.e., research that is sorely needed at present), comprehensive scientific data relative to regionally unique geology, ecology, and hydrology, and best engineering and industrial operations and practices by the energy companies.

It has been my impression over the past year as a participant in various meetings, conferences, coordination with DOE, and exchanges with energy representatives that some of the leaders in energy development (e.g., Range Resources and Chesapeake Energy) are trying to implement best operational and engineering practices. Nevertheless, an independent research program by Federal agencies such as DOE is necessary for evaluating the outcome and appropriateness of these practices. Energy companies, concerned with community issues of safe drinking water and protection of aquatic resources, may be operating with good intentions, but there is no comprehensive research effort by a Federal agency to test and evaluate proposed best industrial practices (e.g., centralizing water reuse facilities, testing private drinking water wells beyond current regulations, providing equipment for environmental monitoring of water quality) on their actual effectiveness to protect human and environmental health. In short, there is little to no impartial, science-based validation of proposed best practices before they are widely implemented.

I wish to make the following points in my testimony:

—the important role that DOE must play in such a research program;

—the need for new research on shale gas development due to the unique geology and hydrology of the Appalachian region (i.e., methods developed for Texas and Alaska do not necessarily apply in Pennsylvania or New York);

—relationship of DOE research to Environmental Protection Agency's (EPA) research plan on hydraulic fracturing and drinking water alone; and

—the benefits of a broad-based research program to gain public acceptance, avoid lawsuits and extreme costs of clean-up, and avoid wide-scale public rejection.

ROLE AND RELEVANCE OF A DEPARTMENT OF ENERGY RESEARCH PROGRAM FOR SHALE GAS DEVELOPMENT

The DOE National Laboratory System (including NETL) is ideally suited to address issues of public health and environmental integrity of natural resources from a holistic perspective. DOE is the primary Federal agency conducting research on

technology to support commercial development of energy resources and is charged with promoting the energy security needs of our country. Almost all of the DOE national labs have a unique capability for environmental research. Before coming to Wilkes University in 1991, I spent 7 years as an environmental research scientist at DOE's Idaho National Engineering Laboratory (with EG&G Idaho, the prime contractor) and over a 2-year period, I was a research data facilitator for seven national labs from coast to coast. I am familiar with this research mission of the DOE national labs and know that its current research budget for the environmental aspects and potential impacts from shale gas development is very limited. The advantage that DOE has is its interdisciplinary approach to energy research, cost effectively matching technology with best engineering practice, to best protect human health and environmental integrity.

UNIQUE GEOLOGY AND HYDROLOGY OF THE APPALACHIAN REGION

Hydraulic fracturing for shale gas is not a new technology and it has been used in other regions of the United States. However, the geology and hydrology of the Appalachian region of the Marcellus Play differs considerably from these other regions (e.g., Texas, Oklahoma, and Alaska) where hydrofracing has been implemented with considerably less public concern about human health and the environment. Based on the experience of Wilkes University faculty geologists and hydrologists in northeastern Pennsylvania, our region is extremely variable and complex in its geology and groundwater hydrology. There are localized faults and fractures in various geologic and hydrologic structures that can affect quality of water supply even without the disruptive effects of drilling. In addition, Pennsylvania has one of the highest rural populations in the United States and many people rely on private drinking water wells. Furthermore, there are no State standards for casing and most private wells in Pennsylvania do not have casing, or at best have inadequate casing. Only good data, designed to ask the appropriate research questions, will avoid the ensuing problems of this unusual but critical set of circumstances:

—local and regional faults and fractures in various geologic strata;
—complex geology and hydrology;
—high rural populations; and
—lack of standards on well casings.

Without an organized Federal research program in this regard, the public outcry and resistance will only increase. Clean-up costs where obvious accidents may occur could be enormous. An ounce of prevention (good research and data on the effectiveness of best practices) is worth a pound of cure.

RELATIONSHIP OF THE DEPARTMENT OF ENERGY'S RESEARCH TO THE ENVIRONMENTAL PROTECTION AGENCY'S RESEARCH PLAN

At this time, it appears that the Congress has provided some modest research funds for EPA's Draft Hydraulic Fracturing Study Plan that was posted for peer review by its (http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/index.cfm) Science Advisory Board on February 8, 2011. While this plan is a good start, it is inadequately funded for research and monitoring over the necessary longer time period of gas development, and it is focused totally on drinking water. Also, EPA is a regulatory agency, and its research will take that direction. In contrast, if funding is available (i.e., via this Subcommittee on Energy and Water Development) to DOE, then this agency's unique interdisciplinary mix of technological research with outstanding research expertise in environmental and ecological systems would complement EPA's expertise and regulatory focus. In short, DOE is well-positioned to support both technological advances and improvements to gas development and to assess its performance and outcome for effectiveness with research on critical environmental and ecological endpoints.

BENEFITS OF A SHALE GAS RESEARCH PROGRAM TO THE PUBLIC

Recent articles in the New York Times and the Philadelphia Enquirer highlight the growing distrust of the public regarding public health and protection of natural resources—for example see: (http://www.nytimes.com/2011/02/27/us/27gas.html?_r=1&ref=us) and (http://www.philly.com/philly/news/20110403_Shalegas_regulation_near_river_divides_Pa_.html?viewAll=y&c=y), respectively. In some cases, public reaction amounts to fear of the unknown; in other cases, significant environmental or public health concerns are real and valid. Nevertheless, the concern by the public (and the scientific community) can only be addressed by an adequate research program aimed at an integrated approach to groundwater concerns (including drinking water wells), and the ecological health of streams and rivers, and natural areas (e.g., issues with forest and wildlife habitat fragmentation).

The DOE national laboratory system is well suited to take on this challenge in an effective fashion and work with other Federal agencies in a collaborative fashion.

RECOMMENDATION

For these reasons, I strongly recommend that the Subcommittee on Energy and Water Development fund critically needed DOE research to help ensure public health and to safeguard environmental and ecological resources. A minimum DOE research budget of $10 million a year for at least 5 years is recommended. Thank you for considering my testimony.

DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

PREPARED STATEMENT OF THE APS FOUR CORNERS POWER PLANT

Dear Chairman Feinstein and Senator Alexander: I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah, and Wyoming, Indian tribes, Federal agencies and water, power, and environmental interests. I request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. I thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF AURORA WATER

Dear Chairman Feinstein and Senator Alexander: I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. I request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. I thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE BHP NAVAJO COAL COMPANY

Dear Chairman Feinstein and Senator Alexander: I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah, and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. I request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-

VerDate Nov 24 2008 17:29 Dec 28, 2012 Jkt 064597 PO 00494 Frm 00314 Fmt 6604 Sfmt 6621 U:\2012HEAR\10HEAR\NDP.TXT 64597

Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. I thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure the BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE CENTRAL UTAH WATER CONSERVANCY DISTRICT

Dear Chairman Feinstein and Senator Alexander: I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah, and Wyoming, Indian tribes, Federal agencies and water, power, and environmental interests. I request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. I thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE CITY OF FARMINGTON

Dear Chairman Feinstein and Senator Alexander: I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah, and Wyoming, Indian tribes, Federal agencies and water, power, and environmental interests. I request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. I thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE COLORADO RIVER BASIN SALINITY CONTROL FORUM

This testimony is in support of funding for the title II Colorado River Basin Salinity Control Program. The Congress has designated the Department of the Interior, Bureau of Reclamation (BOR), to be the lead agency for salinity control in the Colorado River Basin. This role and the authorized program were refined and confirmed by the Congress when Public Law 104–20 was enacted. A total of $17,500,000 is requested for fiscal year 2012 to implement the needed and authorized program. Failure to appropriate these funds will result in significant economic damage in the United States and Mexico.

In recent years, the President's requests have dropped to below $10 million. The Colorado River Basin Salinity Control Forum (Forum) finds this unacceptable. BOR has requests for funding of many very cost-effective proposals through its Basinwide Program that far exceed this funding level. In the judgment of the Forum, this amount is inappropriately low. Water quality commitments to downstream United

States and Mexican water users must be honored while the Basin States continue to develop their Colorado River Compact-apportioned waters. Concentrations of salts in the river cause about $353 million in quantified damage in the United States with significantly greater unquantified damages. Damages occur from:

—A reduction in the yield of salt-sensitive crops and increased water use for leaching in the agricultural sector;

—A reduction in the useful life of galvanized water pipe systems, water heaters, faucets, garbage disposals, clothes washers, and dishwashers, and increased use of bottled water and water softeners in the household sector;

—An increase in the use of water for cooling, and the cost of water softening, and a decrease in equipment service life in the commercial sector;

—An increase in the use of water and the cost of water treatment, and an increase in sewer fees in the industrial sector;

—A decrease in the life of treatment facilities and pipelines in the utility sector;

—Difficulty in meeting wastewater discharge requirements to comply with National Pollutant Discharge Elimination System permit terms and conditions, and an increase in desalination and brine disposal costs due to accumulation of salts in groundwater basins; and

—Increased use of imported water for leaching and the cost of desalination and brine disposal for recycled water.

The Forum, therefore, believes implementation of the program needs to be accelerated to a level beyond that requested by the President in the past.

The program authorized by the Congress in 1995 has proven to be very successful and very cost effective. Proposals from the public and private sector to implement salinity control strategies have far exceeded the available funding and BOR has a backlog of proposals. BOR continues to select the best and most cost-effective proposals. Funds are available for the Colorado River Basin States' cost sharing for the level of Federal funding requested by the Forum. Water quality improvements accomplished under title II of the Colorado River Basin Salinity Control Act also benefit the quality of water delivered to Mexico. Although the United States has always met the commitments of the International Boundary and Water Commission's (Commission) Minute No. 242 to Mexico with respect to water quality, the United States section of the Commission is currently addressing Mexico's request for better water quality at the International Boundary.

Some of the most cost-effective salinity control opportunities occur when BOR can improve irrigation delivery systems at the same time that the U.S. Department of Agriculture's (USDA) program is working with landowners (irrigators) to improve the on-farm irrigation systems. Through the USDA Environmental Quality Incentives Program, adequate on-farm funds appear to be available and adequate BOR funds are needed to maximize the effectiveness of the effort. These salinity control efforts have secondary water conservation benefits at the point of use and downstream at other points of use.

OVERVIEW

In 2000, the Congress reviewed the program as authorized in 1995. Following hearings, and with administration support, the Congress passed legislation that increased the ceiling authorized for this program by $100 million. BOR has received cost-effective proposals to move the program ahead and the Basin States have funds available to cost-share up-front.

The Colorado River Basin Salinity Control Program was originally authorized by the Congress in 1974. The title I portion of the Colorado River Basin Salinity Control Act responded to commitments that the United States made, through Minute No. 242, to Mexico concerning the quality of water being delivered to Mexico below Imperial Dam. Title II of the act established a program to respond to salinity control needs of Colorado River water users in the United States and to comply with the mandates of the then newly legislated Clean Water Act. Initially, the Secretary of the Interior and BOR were given the lead Federal role by the Congress. This testimony is in support of adequate funding for the title II program.

After a decade of investigative and implementation efforts, the Basin States concluded that the Salinity Control Act needed to be amended. The Congress revised the act in 1984. That revision, while leaving implementation of the salinity control policy with the Secretary of the Interior, also gave new salinity control responsibilities to the USDA and to the Bureau of Land Management (BLM). The Congress has charged the administration with implementing the most cost-effective program practicable (measured in dollars per ton of salt removed). The Basin States are strongly supportive of that concept as the Basin States cost share 30 percent of Federal expenditures up-front for the salinity control program, in addition to proceeding

to implement salinity control activities for which they are responsible in the Colorado River Basin.

The Forum is composed of gubernatorial appointees from Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming. The Forum has become the seven-state coordinating body for interfacing with Federal agencies and the Congress to support the implementation of the program necessary to control the salinity of the river system. In close cooperation with the Environmental Protection Agency (EPA) and pursuant to requirements of the Clean Water Act, every 3 years the Forum prepares a formal report analyzing the salinity of the Colorado River, anticipated future salinity, and the program elements necessary to keep the salinities at or below the concentrations in the river system in 1972 at Imperial Dam, and below Parker and Hoover Dams.

In setting water quality standards for the Colorado River system, the salinity concentrations at these three locations have been identified as the numeric criteria. The plan necessary for controlling salinity and reducing downstream damages has been captioned the "Plan of Implementation." The 2008 Review of water quality standards includes an updated Plan of Implementation. The level of appropriation requested in this testimony is in keeping with the agreed-upon plan. If adequate funds are not appropriated, significant damages from the higher salt concentrations in the water will be more widespread in the United States and Mexico.

JUSTIFICATION

The $17,500,000 requested by the Forum on behalf of the seven Colorado River Basin States is the level of funding necessary to proceed with BOR's portion of the Plan of Implementation. In July 1995, the Congress amended the Colorado River Basin Salinity Control Act. The amended act gives BOR new latitude and flexibility in seeking the most cost-effective salinity control opportunities, and it provides for utilization of proposals from project proponents, as well as more involvement from the private as well as the public sector. The result is that salt loading is being prevented at costs often less than one-half the cost under the previous program. The Congress recommitted its support for the revised program when it enacted Public Law 106–459. The Basin States' cost sharing up-front adds 43 cents for every Federal dollar appropriated. The federally chartered Colorado River Basin Salinity Control Advisory Council, created by the Congress in the Salinity Control Act, has met and formally supports the requested level of funding. The Basin States urge the Energy and Water Development Subcommittee to support the funding as set forth in this testimony.

ADDITIONAL SUPPORT OF FUNDING

In addition to the funding identified above for the implementation of the most recently authorized program, the Forum urges the Congress to appropriate funds requested by the administration to continue to maintain and operate salinity control facilities as they are completed and placed into long-term operation. Reclamation has completed the Paradox Valley unit which involves the collection of brines in the Paradox Valley of Colorado and the injection of those brines into a deep aquifer through an injection well. However, the only means of disposing of the brine collected is this injection well. This well has a limited life expectancy. Funds are needed now to allow for planning of alternatives as the end of the life expectancy of this injection well is approached. The continued operation of this project and the Grand Valley Unit will be funded primarily through the Facility Operations activity.

The Forum also supports funding to allow for continued general investigation of the Salinity Control Program as requested by the administration for the Colorado River Water Quality Improvement Program. It is important that Reclamation have planning staff in place, properly funded, so that the progress of the program can be analyzed, coordination between various Federal and State agencies can be accomplished, and future projects and opportunities to control salinity can be properly planned to maintain the water quality standards for salinity so that the Basin States can continue to develop their Colorado River Compact-apportioned waters.

PREPARED STATEMENT OF THE COLORADO RIVER DISTRICT

Dear Chairman Feinstein and Senator Alexander: I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico,

Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. I request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. I thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE COLORADO WATER CONGRESS

Dear Chairman Feinstein and Senator Alexander: I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah and Wyoming, Indian tribes, Federal agencies and water, power, and environmental interests. I request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. I thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF DENVER WATER

Dear Chairman Feinstein and Senator Alexander: On behalf of Denver Water, I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah, and Wyoming, Indian tribes, Federal agencies and water, power, and environmental interests. I request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. I thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE DOLORES WATER CONSERVANCY DISTRICT

Dear Chairman Feinstein and Senator Alexander: I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah, and Wyoming, Indian tribes, Federal agencies and water, power, and environmental interests. I request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item enti-

tled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. I thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE GRAND VALLEY WATER USERS ASSOCIATION

Dear Chairman Feinstein and Senator Alexander: I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah, and Wyoming, Indian tribes, Federal agencies and water, power, and environmental interests. I request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. I thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE JICARILLA APACHE NATION

Dear Chairman Feinstein and Senator Alexander: On behalf of the Jicarilla Apache Nation, I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. Jicarilla Apache Nation has been a participant in the San Juan River Basin Recovery Implementation Program since its inception in 1992, and I want to stress that the continuation of the Program is of the utmost importance to the Nation and the economic viability of the region. Therefore, I request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. I thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENTS OF THE LOWER BRULE RURAL WATER SYSTEM; OGLALA SIOUX RURAL WATER SUPPLY SYSTEM; ROSEBUD RURAL WATER SYSTEM; AND THE WEST RIVER/LYMAN JONES RURAL WATER SYSTEM

FISCAL YEAR 2012 REQUEST

The Mni Wiconi Project beneficiaries respectfully request $26.238 million in appropriations for construction and $11.754 million for operation and maintenance (OMR) activities for fiscal year 2012, a total request of $37.992 million:

FISCAL YEAR 2012 TOTAL REQUEST

	Amount
Construction	$26,238,000
OMR	11,754,000
Total	37,992,000

The construction request includes $0.960 million for Bureau of Reclamation (BOR) oversight, and the operation, maintenance, and replacement (OMR) request includes $1.447 million for BOR oversight.

CONSTRUCTION FUNDS

Construction funds would be utilized as follows:

Project area	Construction request fiscal year 2012
Oglala Sioux Rural Water Supply System:	
Core	([1])
Distribution	$10,848,000
West River/Lyman-Jones Rural Water Supply	5,475,000
Rosebud Rural Water Supply	9,915,000
Total	26,238,000

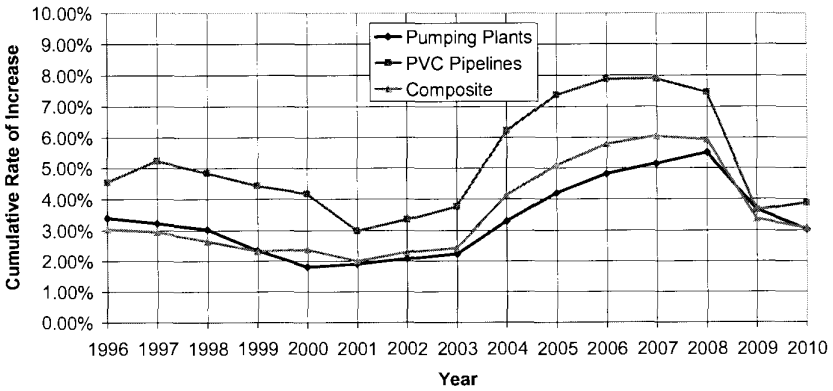
[1] Complete.

As shown in the table below, the project will be 89 percent complete at the end of fiscal year 2011. Construction funds remaining to be spent after fiscal year 2011 will total $49.568 million within the current authorization (in October 2010 dollars). Additional administrative and overhead costs of extending the project, additional construction costs, and inflation at 3.89 percent over the next 2 years will increase remaining project costs to $83.217 million after fiscal year 2011.

Total Federal construction funding (October 2010 dollars)	$464,669,000
Estimated Federal construction funding spent through fiscal year 2011	$415,101,000
Percent spent through fiscal year 2011	89.33
Amount remaining after 2010:	
Total authorized (October 2010 dollars)	$49,568,000
Adjusted for extension to fiscal year 2013 and other costs	$78,607,000
Adjusted for annual inflation	$83,217,000
Completion fiscal year (Statutory fiscal year 2013; Public Law 110–161)	2013
Years to complete	2
Average annual required for fiscal year 2013 finish with re-authorization	$41,609,000
Average annual required for fiscal year 2013 finish without re-authorization	$26,238,000

Cost indexing over the last 5 years has averaged 3.89 percent for pipelines, primarily due to a 7.7-percent reduction in 2009 during recession. The increase in pipeline costs last year was 6.17 percent. Pipelines are the principal components yet to be completed (see chart below). Assuming average 3.89-percent inflation in construction costs over the remaining 2 years, average funding of $26.238 million is required to complete the project within the existing authorization, and $41.609 million is required to complete the project if re-authorized to finish the project as planned.

RATE OF CONSTRUCTION COST INCREASE
FOR ANNUAL AND 5-YEAR RUNNING AVERAGES SINCE 1992,
US BUREAU OF RECLAMATION



The extension of the project from 2008 to 2013 did not provide for budgeting of BOR oversight, administration and other "overhead" costs, which will total $27.157 million by the end of 2013. These costs have been and will be incurred at the expense of construction elements, and a $29.039 million re-authorization of the construction ceiling is needed to recover those overhead costs, due primarily to the slow pace of budgeting by the administration. The administration's budget for construction for fiscal year 2012 is $16 million, far less than the $26.238 million needed, and threatens to extend the project beyond 2013 with continued increases in overhead costs and depletion of funds that would otherwise be applied to finishing construction.

The request will create an estimated 210 full-time equivalent (FTE) construction jobs and 94 OMR jobs in an area of the Nation with the lowest per capita income and deepest poverty.

Poverty is the harbinger of the severe healthcare crisis facing the Indian people in the Northern Great Plains. The present value of extra costs of healthcare during the lifetime of each 24,000 members of the Indian population in the Mni Wiconi Project is estimated at $1.12 to $2.25 billion (in 2010 dollars). The costs are based on extraordinarily high rates of mortality due to heart disease, cancer and diabetes. The Mni Wiconi Project has the direct effect of employing part of our unemployed and underemployed Indian population and creates the necessary infrastructure for more employment in indirect commercial and industrial development. This will reduce poverty, mortality and the national cost burden of Indian healthcare.

OGLALA SIOUX RURAL WATER SUPPLY SYSTEM

Core System

The Oglala Sioux Tribe has completed the core system. The completion of the Oglala Sioux Rural Water Supply System (OSRWSS) core system was an historic milestone and permits greater focus in remaining years of the project on completion of the distribution systems.

Distribution System

The Pine Ridge Indian Reservation will receive significantly more water from the OSRWSS core system in fiscal year 2011. Major segments of the main transmission system will be completed across the Reservation and connect many of the larger communities with safe and adequate drinking water. OSRWSS pipelines now deliver water from the Missouri River to the communities of Georgetown, Wanblee, Crazy Horse School, Lakota Fund Housing and Potato Creek Community and the large number of rural homes between the communities. The communities of Hisle, Kyle, Manderson, Red Shirt, Porcupine and Wounded Knee can be served with Missouri River water by the end of 2011.

u:\graphics\y2012\rcd1.eps

Fiscal year 2012 will be another historic year, but considerable work remains to distribute the water supply throughout the reservation. More than 40 percent of the project's population resides on the Pine Ridge Indian Reservation, and only 78 percent of the distribution system will be complete at the end of 2011. The reservation public received its first Missouri River supply in 2009 after waiting 15 years for construction of core facilities to the Reservation.

Project funds in fiscal year 2012 will continue building the on-reservation transmission system. Funding will be used for transmission and service line development east of Pine Ridge Village between Wakpamni, Batesland, and Allen and south toward the Nebraska State line. This area has been deferred in the past due to funding constraints. The supervisory control and data acquisition (SCADA) facilities will be installed with state-of-the-art electronic equipment.

As set forth above, activity on the Pine Ridge Indian Reservation in fiscal year 2012 continues to focus on constructing the transmission system that serves as the "backbone" of the Project on the Reservation from the White River in the northeast corner of the Reservation to Pine Ridge Village. The tribe will continue to focus on the disinfection requirements to blend Missouri River water and high-quality groundwater without creating harmful contaminants. State-of-the-art designs are being implemented for water quality control, and the Project will serve as a model for other projects requiring these facilities.

The Oglala Sioux Tribe is supportive of the funding request of other sponsors.

WEST RIVER/LYMAN-JONES RURAL WATER SYSTEM

West River/Lyman-Jones Rural Water System (WR/LJ RWS) projects for fiscal year 2012 include standby generation facilities, conversion of community water systems, storage reservoirs, SCADA, and cold storage additions.

The upper Midwest and specifically the Mni Wiconi project area regularly experience power outages as the result of winter weather conditions. Regulatory authorities in South Dakota have recommended standby generation as the result of statewide power outages experienced during the winters of 2005–2006 and 2009–2010. BOR has concurred in the addition of standby generation to the Mni Wiconi plan of work. WR/LJ has outlined a 3-year standby generation project schedule.

The WR/LJ project includes four areas in which area ranchers are served by a common well of limited capacity and unacceptable water quality. The construction of WR/LJ facilities to serve them as individual members of WR/LJ will provide the pipeline capacity and water quality meeting Mni Wiconi project design standards.

Water storage needs include an elevated tower in the Reliance service area, a ground storage reservoir in Mellette County and supplemental storage in the Elbon service area.

SCADA capability provides accurate and efficient transmission of data and allows remote control of pumping and storage facilities. The WR/LJ SCADA system will be completed using the requested funding.

Storage facilities at the Murdo and Philip operations centers will complete the building components of the WR/LJ project.

Previous Federal appropriations to the Mni Wiconi project have made possible the delivery of much needed quality water to members of the West River/Lyman-Jones RWS and to the livestock industry in the project area. This would not have been possible without State and Federal assistance.

ROSEBUD SIOUX RURAL WATER SYSTEM—FISCAL YEAR 2012

Funding for fiscal year 2012 will be used to complete two major projects begun in fiscal year 2011 and further work on the Rosebud Sioux Rural Water System (RSRWS or Sicangu Mni Wiconi) distribution system. In fiscal year 2011 work began on the water supply for the Rosebud Adult Correctional Facility (ACF). The ACF is a major project that will be constructed in 2011 and in operation in August 2012. The intent of locating the facility on Rosebud is that incarcerated individuals are closer to the family and culture and the recidivism rate will be lower and the local economy also benefits. The Mni Wiconi Project is responsible for delivering water to the ACF and providing adequate volumes to meet peak demands. An elevated storage tank appears to be the only feasible option available.

The other major project initiated in fiscal year 2011 requiring fiscal year 2012 funds is the Sicangu Village Supply Project. Because of unexpected quality and quantity limitations of the aquifer in southern Todd County, high-quality surface water from OSRWSS will be conveyed by a transmission pipeline to a new elevated storage reservoir at Sicangu Village. The elevated reservoir is currently under contract and will be completed this summer. Sicangu Village is an expanding housing area and the local wells cannot meet demands of expansion. The transmission line

and elevated reservoir will provide a reliable supply of high-quality water to the development corridor along Highway 83 between Mission and Sicangu Village. It was hoped that this area of the Rosebud Reservation would not need to be connected to the Mni Wiconi Project because of the presence of the Ogallala aquifer. The estimated demands for the area were, however, included in system planning and it now appears this foresight was beneficial because portions of the aquifer have high nitrates and other areas are not as high yielding as originally thought.

Distribution system projects will extend service to two schools in southern Todd County and meet domestic needs in other areas of the Primary Service Area (Todd and Mellette Counties). It was hoped to connect the Lakeview and Littleburg schools to the system in fiscal year 2011, but fiscal year 2011 funds are not sufficient. The wells that supply water to both of the schools have high nitrates. The Mni Wiconi Project will ensure that future generations on the Rosebud Reservation, both Indians and non-Indians alike, will be supplied with water that meets safe drinking water standards.

The other distribution system expansion planned for 2012 is the completion of the East Todd Project. The initial phase of this project was completed by the Tribal Force Account Program in late 2009 and rights-of-way have now been obtained to undertake the remainder of the project. This project also serves an area where water quality has been declining due to elevated nitrate levels.

The ongoing effort to connect rural homes to transmission and distribution lines will also continue in 2012. This work is undertaken through the Tribal Force Account Program. The Force Account Program not only provides a reliable source of high-quality water to rural homes, it also provides employment to numerous tribal members and helps circulate dollars on the reservation thereby stimulating the local economy.

OPERATION, MAINTENANCE, AND REPLACEMENT

The Sponsors will continue to work with BOR to ensure that their budgets are adequate to properly operate, maintain, and replace respective portions of the core and distribution systems. The Sponsors will also continue to manage operation, maintenance, and replacement expenses to ensure that the limited funds can best be balanced between construction and OMR. Unfortunately the administration's budget for fiscal year 2012 ($10.058 million) is under-stated for the first time in the history of the project. The project needs $11.754 million. BOR's budget for 2012 will cause the project to fall into a state of disrepair and will threaten the considerable investment of the United States from 1994 to date.

The project has been treating and delivering more water each year from the OSRWSS Water Treatment Plant near Fort Pierre as construction is advanced in the Rosebud, WRLJ and Oglala service areas. Completion of significant core and distribution pipelines has resulted in more deliveries to more communities and rural users. The need for sufficient funds to properly operate and maintain the functioning system throughout the project has grown as the project has now reached 89-percent completion. The OMR budget must be adequate to keep pace with the system that is placed in operation.

The Lower Brule Rural Water System (LBRWS) is essentially complete with all major components such as the water treatment plant, booster stations, and tanks/reservoirs in full operation. As a result, LBRWS's operation and maintenance portion of the budget has reached a baseline amount to which only slight adjustments along with inflation should be made each year. The portion of the LBRWS OM&R budget that is somewhat variable is the Replacement Additions and Extraordinary (RAX) maintenance items. LBRWS will continue to work with BOR and the other sponsors to prioritize their needs and ensure that their system is operating to the standards that have been established over the past several years. With that in mind, the LBRWS request for OMR for fiscal year 2012 is $1,550,000.

The RSRWS expanded significantly in 2010 and surface water now reaches Todd County. To accomplish this, two additional high-capacity pumping stations were added to the system. The new pumping stations increase operational costs for both energy, maintenance and personnel. In addition, energy costs increases have significantly impacted Rosebud for electrical costs and vehicle expenses. With the oldest parts of the system in service for 15 years replacement costs covered under RAX are also becoming more significant. RAX funds must be included in the Mni Wiconi Project appropriations because they are not funded through BOR's RAX program.

OSRWSS will incur unanticipated core OMR expenses in fiscal year 2012 to replace valves, remove sludge at the water treatment plant and supplement American Recovery and Reinvestment Act (ARRA) funds for chlorine booster stations and gen-

erators/transfer switches. The unanticipated costs are $661,000, which will improve facilities that benefit all project sponsors.

The Mni Wiconi Project tribal beneficiaries (as listed below) respectfully request appropriations for OMR in fiscal year 2012 in the amount of $11.754 million.

FISCAL YEAR 2011 OMR

Project area	Request
Oglala Sioux Rural Water Supply System:	
Core	$3,380,000
Distribution	3,100,000
Lower Brule	1,550,000
Rosebud RWS	2,277,000
Reclamation	1,447,000
Total	11,754,000

TRUST RESPONSIBILITY

Public Law 100–516, the Mni Wiconi Project Act, provides that:

". . . United States has a trust responsibility to ensure that adequate and safe water supplies are available to meet the economic, environmental, water supply, and public health needs of the . . . Indian Reservation[s] . . ."

The field staff and the Regional Office of BOR have been extremely helpful in advancing this project, but there has been concern that BOR mid-managers and Office of Management and Budget (OMB) are making unilateral decisions that harm the trust relationship. The following are specific instances:

—BOR has re-distributed funds allocated to the Oglala Sioux Tribe to West River/Lyman Jones without the urging of West River/Lyman Jones to further BOR performance objectives. While OSRWSS has consistently carried funds over from one fiscal year to another, there has never been an instance or a threat of an instance of not spending funding appropriated in a given year in that year or the year that follows. The rate of completion of the OSRWSS project is decelerated and the rate of other projects has been accelerated without the urging of recipients of re-distributed funding;

—To our complete satisfaction on construction, BOR has yielded to the leadership of the Indian and non-Indian sponsors to permit their collaborative development of annual construction funding allocations and budgets. On the other hand, BOR has imposed its structure and budget specifics in lieu of Indian leadership on the formulation of annual OMR allocations and budgets;

—OMB has budgeted funds to BOR for its Rural Water Program without separation of construction and OMR accounts, and the constraints on the total budget have fallen heavily on the funds available to complete construction. OMR budgeting has been held relatively constant with higher percentages of construction completion, and construction budgeting has decreased. The fixed level of OMR funding has constrained the activities needed on the Indian distribution systems. The construction budget is diminishing at a time when acceleration of construction is needed to deliver the benefits of the project to the Indian people. At a minimum, the construction budget should be a priority and should be held at a level needed to complete the project on the statutory schedule in 2013 while providing an adequate OMR budget;

—Mid-levels managers have often view the project as a BOR project, rather than as an Indian project as provided by Public Law 100–516, and their vision is affected.

Improvement of the relationship and performance has been observed over the last year as BOR has responded to this concern.

PREPARED STATEMENT OF MATTHEW H. MEAD, GOVERNOR, STATE OF WYOMING

Dear Chairman Feinstein and Senator Alexander: I am writing to request your support and assistance in insuring continued funding for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. Wyoming joins the

other participating States and non-Federal partners in requesting your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. Recognizing the need for fiscal responsibility, I must also point out, with respect to the fish recovery programs, that it will cost the program participants including, Wyoming, much more in terms of Endangered Species Act (ESA) costs if these programs do not continue.

The Upper Colorado and San Juan recovery programs are national models of collaborative conservation partnerships working to recover endangered species while meeting water use and water development demands in compliance with the Federal ESA, State law, and interstate compacts in the Intermountain West.

Since 1988, the two programs, collectively, have provided ESA section 7 compliance (without litigation) for more than 2,160 Federal, tribal, State, and privately managed water projects depleting more than 3.7 million acre-feet of water per year. The Department of the Interior recognized these programs with its nation-wide Cooperative Conservation Award in April 2008 as outstanding collaborative partnerships accomplishing substantial on-the-ground conservation results. Substantial non-Federal cost-sharing funding exceeding 50 percent is occurring pursuant to their authorization in Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. On behalf of the citizens of Wyoming, I thank you for that support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

STATEMENT OF THE NEW MEXICO STATE ENGINEER AND THE NEW MEXICO INTERSTATE STREAM COMMISSION

SUMMARY

This statement is submitted in support of fiscal year 2012 appropriations for the Colorado River Basin Salinity Control Program of the Department of the Interior's Bureau of Reclamation (BOR). The Congress designated BOR to be the lead agency for salinity control in the Colorado River Basin by the Colorado River Basin Salinity Control Act of 1974, and reconfirmed BOR's role by passage of Public Law 104–20. A total of $17,500,000 is requested for fiscal year 2012 to implement the authorized salinity control program of BOR. Recent years have followed a trend of inadequate funding for the needs of the program. An appropriation of $17,500,000 for BOR's salinity control program is necessary to restore the program to the level needed to protect water quality standards for salinity and to prevent unnecessary levels of economic damage from increased salinity in water delivered to the Lower Basin States of the Colorado River. In addition, funding for operation and maintenance of existing projects and sufficient general investigation funding is required to identify new salinity control opportunities.

STATEMENT

The water quality standards for salinity of the Colorado River must be protected while the Basin States continue to develop their compact apportioned waters of the river. The salinity standards for the Colorado River have been adopted by the seven Basin States and approved by the Environmental Protection Agency. While currently the standards have not been exceeded, salinity-control projects must be brought on-line in a timely and cost-effective manner to prevent future effects that could result in unnecessary damages from higher levels of salinity in the water delivered to the Lower Basin States of the Colorado River.

The Colorado River Basin Salinity Control Act was authorized by the Congress and signed into law in 1974. The seven Colorado River Basin States, in response to the Clean Water Act of 1972, formed the Colorado River Basin Salinity Control Forum (Forum), a body comprised of gubernatorial representatives from the seven States. The Forum was created to provide for interstate cooperation in response to the Clean Water Act and to provide the States with information necessary to comply with sections 303(a) and (b) of the act. The Forum has become the primary means for the Basin States to coordinate with Federal agencies and the Congress to support the implementation of the salinity control program for the Colorado River Basin.

BOR studies show that quantified damages from the Colorado River to United States water users are about $353 million per year. Unquantified damages are sig-

nificantly greater. Damages are estimated at $75 million per year for every additional increase of 30 milligrams per liter in salinity of the Colorado River. Control of salinity is necessary for the States of the Colorado River Basin, including New Mexico, to continue to develop their compact-apportioned waters of the Colorado River.

Timely appropriations for the funding of the salinity control program are essential to comply with the water quality standards for salinity, prevent unnecessary economic damages in the United States, and protect the quality of the water that the United States is obligated to deliver to Mexico. The Basin States and Federal agencies agree that increases in the salinity of the Colorado River will result in significant increases in damages to water users in the Lower Colorado River Basin. Although the United States has always met the water quality standard for salinity of water delivered to Mexico under Minute No. 242 of the International Boundary and Water Commission (IBWC), the United States through the United States section of IBWC is currently addressing a request by Mexico for better quality water. Continued strong support and adequate funding of the salinity control program is required to control salinity-related damages in the United States and Mexico.

The Congress amended the Colorado River Basin Salinity Control Act in July 1995 (Public Law 104–20). The salinity control program authorized by the Congress by the amendment has proven to be very cost-effective, and the Basin States are standing ready with up-front cost-sharing. Proposals from public and private sector entities in response to BOR's requests for proposals and funding opportunity announcements have far exceeded available funding appropriated in recent years. Basin States cost-sharing funds are available for the $17.5 million appropriation request for fiscal year 2012. The Basin States' cost-sharing adds 43 cents for each Federal dollar appropriated.

Public Law 106–459 gave BOR additional spending authority for the salinity control program. With the additional authority in place and significant cost-sharing available from the Basin States, it is essential that the salinity control program be funded at the level requested by the Forum and Basin States to protect the water quality of the Colorado River. Some of the most cost-effective salinity control opportunities occur when BOR improves irrigation delivery systems concurrently with on-farm irrigation improvements undertaken by the U.S. Department of Agriculture's Environmental Quality Incentives Program (EQIP). The Basin States cost-share funding is available for both on-farm and off-farm improvements. The EQIP funding appears to be adequate to accomplish the on-farm work. Adequate funding for BOR's off-farm work is needed to maintain timely implementation and effectiveness of salinity control measures.

Maintenance and operation of BOR's salinity control projects and general investigations to identify new cost-effective salinity control projects are necessary for the continued success of the salinity control program. Investigation of new opportunities for salinity control is critical while the Basin States continue to develop and use their compact-apportioned waters of the Colorado River. The water-quality standards for salinity are dependent on timely implementation of salinity control projects, adequate funding to maintain and operate existing projects, and sufficient general investigation funding to determine new cost-effective opportunities for salinity control.

Continued funding primarily through BOR's Facility Operations activity to support maintenance and operation of the Paradox Valley Unit and the Grand Valley Unit is critically needed. General Investigation funding through BOR's Colorado River Water Quality Improvement Program needs to be restored to a level that supports the need for identification and study of new salinity control opportunities to maintain the levels of salinity control needed to meet water quality standards and control economic damages in the Lower Colorado River Basin.

I urge the Congress to appropriate $17.5 million to BOR for the Colorado River Basin Salinity Control Program, plus adequate funding for operation and maintenance of existing projects and adequate funding for general investigations to identify new salinity control opportunities. Also, I fully support testimony by the Forum's Executive Director, Don Barnett, in request of this appropriation, and the recommendation of an appropriation of the same amount by the federally chartered Colorado River Basin Salinity Control Advisory Council.

PREPARED STATEMENT OF THE NORTHERN COLORADO WATER CONSERVANCY DISTRICT

Dear Chairman Feinstein and Senator Alexander: On behalf of the Boards of Directors of the Northern Colorado Water Conservancy District and Municipal Subdistrict, Northern Colorado Water Conservancy District, I am writing to request your

support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392.

These two successful, ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests. I request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region consistent with the President's recommended budget. Substantial non-Federal, cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. I thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE ORCHARD MESA IRRIGATION DISTRICT

Dear Chairman Feinstein and Senator Alexander: I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah, and Wyoming, Indian tribes, Federal agencies and water, power, and environmental interests. I request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. I thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF PNM RESOURCES, INC.

Dear Chairman Feinstein and Senator Alexander: I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah, and Wyoming, Indian tribes, Federal agencies and water, power, and environmental interests. I request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. I thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE SAN JUAN WATER COMMISSION

Dear Chairman Feinstein and Senator Alexander: I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico,

Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. I request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. I thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE SOUTHERN UTE INDIAN TRIBE

Dear Chairman Feinstein and Senator Alexander: On behalf of the Southern Ute Indian Tribe, I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah and Wyoming, the Southern Ute Indian Tribe, the Ute Mountain Ute Indian Tribe, the Navajo Nation, the Jicarilla Apache Nation, Federal agencies and water, power, and environmental interests. The tribe requests your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. The tribe thanks you for the subcommittee's past support and requests the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE SOUTHWESTERN WATER CONSERVATION DISTRICT

Dear Chairman Feinstein and Senator Alexander: We are writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah and Wyoming, Indian tribes, Federal agencies and water, power, and environmental interests. We request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. Thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE STATE OF NEW MEXICO, OFFICE OF THE STATE ENGINEER, SANTA FE

Dear Chairman Feinstein and Senator Alexander: I am writing to request your support and assistance in insuring continued funding for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah, and Wyoming, Indian tribes, Federal agencies and water, power, and environmental interests. The State of New

Mexico requests your support for an appropriation in the President's recommended budget for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region.

The Upper Colorado and San Juan recovery programs are national models of collaborative conservation partnerships working to recover endangered species while meeting water use and water development demands in compliance with the Federal Endangered Species Act (ESA), State law, and interstate compacts in the Intermountain West.

Since 1988, the two programs, collectively, have provided ESA section 7 compliance (without litigation) for more than 2,160 Federal, tribal, State and privately managed water projects depleting more than 3.7 million acre-feet of water per year. The Department of the Interior recognized these programs with its nationwide Cooperative Conservation Award in April 2008 as outstanding collaborative partnerships accomplishing substantial on-the-ground conservation results. Substantial non-Federal cost-sharing funding exceeding 50 percent is occurring pursuant to their authorization in Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. On behalf of the citizens of New Mexico, I thank you for that support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE NAVAJO NATION

Dear Chairman Feinstein and Senator Alexander: The Navajo Nation is an active participant in, and strong supporter of, the San Juan River Recovery Implementation Program. On behalf of the Navajo Nation, I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah, and Wyoming, Indian tribes, Federal agencies and water, power, and environmental interests. I request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. The Navajo Nation thanks the subcommittee for its past support and requests the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE TRI-COUNTY WATER CONSERVANCY DISTRICT

Dear Chairman Feinstein and Senator Alexander: The Board of the Tri-County Water Conservancy District is writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah, and Wyoming, Indian tribes, Federal agencies and water, power, and environmental interests. We request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. We thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE UPPER GUNNISON RIVER WATER CONSERVANCY DISTRICT

Dear Chairman Feinstein and Senator Alexander: I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah and Wyoming, Indian tribes, Federal agencies and water, power, and environmental interests. I request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. I thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE UTAH WATER USERS ASSOCIATION

Dear Chairman Feinstein and Senator Alexander: I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. I request your support for an appropriation for fiscal year 2012 of $6,248,000 to the Bureau of Reclamation (BOR) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. I thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE WYOMING WATER ASSOCIATION

Dear Chairman Feinstein and Senator Alexander: I am writing to request your support for continued funding in fiscal year 2012 for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program as authorized by Public Law 106–392. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah and Wyoming, Indian tribes, Federal agencies and water, power, and environmental interests. I request your support for an appropriation for fiscal year 2012 of $6,248,000 to BOR within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region, consistent with the President's recommended budget. Substantial non-Federal cost-sharing funding is occurring pursuant to Public Law 106–392, as amended.

The requested Federal appropriations are critically important to these efforts moving forward. The past support of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. I thank you for the subcommittee's past support and request the subcommittee's assistance for fiscal year 2012 funding to ensure BOR's continuing financial participation in these vitally important programs.

LIST OF WITNESSES, COMMUNICATIONS, AND PREPARED STATEMENTS

Page

Alexander, Senator Lamar, U.S. Senator From Tenneessee:
- Opening Statement of 126
- Questions Submitted by 119, 188
- Statements of 3, 93

Altira Group, LLC, Prepared Statement of the 224

American:
- Association of Petroleum Geologists, Prepared Statement of the 224
- Gas Association, Prepared Statement of the 226
- Geological Institute, Prepared Statement of the 229
- Public Power Association, Prepared Statement of the 230
- Society:
  - For Microbiology, Prepared Statement of the 232
  - Of:
    - Agronomy, Prepared Statement of the 235
    - Plant Biologists, Prepared Statement of the 237
- Wind Energy Association, Prepared Statement of the 238

Anadarko Petroleum Corporation, Prepared Statement of 241

APS Four Corners Power Plant, Prepared Statement of the 308

Aurora Water, Prepared Statement of 308

BHP Navajo Coal Company, Prepared Statement of the 308

Board of:
- Commissioners, Fifth Louisiana Levee District, Prepared Statement of the 201
- Levee Commissioners for the Yazoo-Mississippi Delta, Prepared Statement of the 202
- Mississippi Levee Commissioners, Prepared Statement of the 203

Bob Lawrence & Associates, Inc., Prepared Statement of 241

Bryant, Dr. Steven, Prepared Statement of 255

Castle, Hon. Anne, Assistant Secretary for Water and Science, Bureau of Reclamation, Department of the Interior 18
- Prepared Statement of 19

Center for Advanced Separation Technologies, Prepared Statement of the 243

Central Utah Water Conservancy District, Prepared Statement of the 309

Chu, Hon. Steven, Secretary, Office of the Secretary, Department of Energy 125
- Prepared Statement of 130
- Summary Statement of 128

City of:
- Farmington, Prepared Statement of the 309
- Morro Bay, California, Prepared Statement of the 205

Coal Utilization Research Council, Prepared Statement of the 245

Cochran, Senator Thad, U.S. Senator From Mississippi, Prepared Statement of 4

Colorado:
- Oil & Gas Association, Prepared Statement of the 248
- River:
  - Basin Salinity Control Forum, Prepared Statement of the 309
  - District, Prepared Statement of the 311
- Water Congress, Prepared Statement of the 312

Connor, Hon. Michael L., Commissioner, Bureau of Reclamation, Department of the Interior 25

VerDate Nov 24 2008 17:29 Dec 28, 2012 Jkt 064597 PO 00494 Frm 00331 Fmt 5905 Sfmt 6646 U:\2012HEAR\10HEAR\10WIT12.000 64597

Page

Prepared Statement of 27
Questions Submitted to 77
Cook, Dr. Donald, Deputy Administrator for Defense Programs, National Nuclear Security Administration, Department of Energy 91
Crop Science Society of America, Prepared Statement of the 235
Cummins Inc., Prepared Statement of 249

D'Agostino, Hon. Thomas P., Under Secretary for Nuclear Security and Administration, National Nuclear Security Administration, Department of Energy 91
Prepared Statement of 97
Summary Statement of 95
Darcy, Hon. Jo-Ellen, Assistant Secretary of the Army (Civil Works), Corps of Engineers—Civil, Department of the Army, Department of Defense—Civil 1
Prepared Statement of 6
Questions Submitted to 59
Summary Statement of 5
Denver Water, Prepared Statement of 312
Diesel Technology Forum, Prepared Statement of the 251
Dolores Water Conservancy District, Prepared Statement of the 312
Donald, Admiral Kirkland, Deputy Administrator for Naval Reactors, National Nuclear Security Administration, Department of Energy 91

Edison Electric Institute, Prepared Statement of the 256
Electric Drive Transportation Association, Prepared Statement of the 258
Energy:
Committee of ASME's Technical Communities, Prepared Statement of the 259
Efficiency Coalition, Prepared Statement of the 261
Environmental Council of the States, Prepared Statement of the 199
EnviroScience, Inc., Prepared Statement of 206
Executive Committee of the Fermi National Accelerator Laboratory Users Organization, Prepared Statement of the 262

Federation of American Societies for Experimental Biology, Prepared Statement of the 265
Feinstein, Senator Dianne, U.S. Senator From California:
Opening Statements of 1, 91, 125
Questions Submitted by..... 65, 77, 112
Fuel Cell and Hydrogen Energy Association, Prepared Statement of the 266

Gas:
Technology Institute, Prepared Statement of the 268
Turbine Association, Prepared Statement of the 271
GE Energy, Prepared Statement of 273
Graham, Senator Lindsey, U.S. Senator From South Carolina, Questions Submitted by 192
Grand Valley Water Users Association, Prepared Statement of the 313
GSI Environmental Inc., Prepared Statement of 276

Harkin, Senator Tom, U.S. Senator From Iowa, Questions Submitted by 180
Harrington, Anne, Deputy Administrator for Defense Nuclear Nonproliferation, National Nuclear Security Administration, Department of Energy 91
Hill, Jr., Richard Newton, Former President/Owner of Hill Equipment Corp., Prepared Statement of 290

Inouye, Senator Daniel K., U.S. Senator From Hawaii, Questions Submitted by 196
Izaak Walton League of America, Prepared Statement of the 207

Jicarilla Apache Nation, Prepared Statement of the 313
Johnson, Senator Tim, U.S. Senator From South Dakota, Questions Submitted by 75, 89, 178

Landrieu, Senator Mary L., U.S. Senator From Louisiana, Questions Submitted by 59, 75
Lautenberg, Senator Frank R., U.S. Senator From New Jersey, Questions Submitted by 180

Page

Little River Drainage District, Prepared Statement of the 218
Lower Brule Rural Water System, Prepared Statement of the 213

McConnell, Senator Mitch, U.S. Senator From Kentucky, Questions Submitted by 62, 123, 192
Mead, Matthew H., Governor, State of Wyoming, Prepared Statement of 318
Mississippi Valley Flood Control Association, Prepared Statement of the 209
Missouri River Association of States and Tribes, Prepared Statement of the ... 212
Moss Landing Harbor District, California, Prepared Statement of the 215
Murkowski, Senator Lisa, U.S. Senator From Alaska, Questions Submitted by 63
Murray, Senator Patty, U.S. Senator From Washington, Questions Submitted by..... 59, 89, 172
Murray, Reed, Program Director, Central Utah Project Completion Act Office 18

National:
Association:
For State Community Services Programs, Prepared Statement of the 278
Of State Energy Officials, Prepared Statement of the 280
Hydropower Association, Prepared Statement of the 283
Nature Conservancy, Prepared Statement of the 219
Navajo Nation, Prepared Statement of the 323
New Mexico:
Interstate Stream Commission, Prepared Statement of the 319
Institute of Mining and Technology, Prepared Statement of the 285
State Engineer, Prepared Statement of the 319
Northern Colorado Water Conservancy District, Prepared Statement of the 320
NuScale Power, Inc., Prepared Statement of 289
Nuclear Energy Institute, Prepared Statement of the 286

Oglala Sioux Rural Water Supply System, Prepared Statement of the 313
Ohio Lake Management Society, Prepared Statement of the 216
Orchard Mesa Irrigation District, Prepared Statement of the 321

PNM Resources, Inc., Prepared Statement of 321

Reed, Senator Jack, U.S. Senator From Rhode Island, Questions Submitted by 76
Rosebud Rural Water System, Prepared Statement of the 313

San Juan Water Commission, Prepared Statement of the 321
Society for Industrial and Applied Mathematics, Prepared Statement of the ... 292
Soil Science Society of America, Prepared Statement of the 235
Southern:
Company Generation, Prepared Statement of 294
Ute Indian Tribe, Prepared Statement of the 322
Southwestern Water Conservation District, Prepared Statement of the 322
State of New Mexico, Office of the State Engineer, Santa Fe, Prepared Statement of the 322
Stockton Port District, California, Prepared Statement of the 216
Symbiotics, Prepared Statement of 297

Technology International, Inc., Prepared Statement of 298
Tester, Senator Jon, U.S. Senator From Montana, Questions Submitted by..... 117, 183
Tri-County Water Conservancy District, Prepared Statement of the 323

Universities Research Association, Inc., Prepared Statement of the 299
University Corporation for Atmospheric Research, Prepared Statement of the 300
Upper Gunnison River Water Conservancy District, Prepared Statement of the 324
Utah Water Users Association, Prepared Statement of the 324

Van Antwerp, Lieutenant General Robert L., Chief of Engineers, Corps of Engineers—Civil, Department of the Army, Department of Defense—Civil .. 13
Prepared Statement of 14

Page

Questions Submitted to 65
Ventura Harbor, Ventura Port District—California, Prepared Statement of the 222

West River/Lyman Jones Rural Water System, Prepared Statement of the 313
West Virginia University, Prepared Statement of 302
Wilkes University, College of Science and Engineering, Prepared Statement of 305
Wyoming Water Association, Prepared Statement of the 324

SUBJECT INDEX

DEPARTMENT OF DEFENSE—CIVIL

DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS—CIVIL

Page

Additional Committee Questions 58
America's Great Outdoors Initiative and Civil Works Recreation 11
American Recovery and Reinvestment Act 12
Aquatic Ecosystem Restoration 9
California-Specific Questions 73
Coastal Restoration and Protection—Louisiana Coastal Area 61
Completion of the Levee System for the Greater New Orleans Area 59
Construction Program 15
Dam Safety 67
Direct Program 14
Dredging Needs on the Mississippi 61
Efficiency and Effectiveness of the Corps of Engineers Operations 16
Emergency Response 17
Fiscal Year 2012 Discretionary Funding Level 7
Harbor Maintenance Trust Fund 11, 65
Infrastructure Recapitalization 10
Inland Waterway Trust Fund 11, 62
Investigations Program 14
Levee:
  Certification 72, 75
  Vegetation 70
Lower-Priority Programs 12
National Defense 17
New:
  Investments in Fiscal Year 2012 9
  Starts 69
Operation and Maintenance Program 15
Panama Canal 76
Planning:
  Improvements 11
  Program Modernization 16
Proposed Legislation 16
Reimbursable Program 16
Research and Development 17
Small Ports 68
Summary of Fiscal Year 2012 Program Budget 14
Veterans Curation Project 12

DEPARTMENT OF ENERGY

Additional Committee Questions 171
Advanced Cable and Conductors Program (Formerly High Temperature Superconducting Program) 177
American Recovery and Reinvestment Act 189
Biofuels 180
Blue Ribbon Commission on Nuclear Waste 189
Clean Renewable Energy Bonds 178
Cleanup Budgets for the Nuclear Weapons Complex 199

VerDate Nov 24 2008 17:29 Dec 28, 2012 Jkt 064597 PO 00494 Frm 00335 Fmt 5905 Sfmt 0486 U:\2012HEAR\10HEAR\10SUB12.000 64597

Page

Contracts Management 190
Coordination of Power Marketing Administrations and the Department of Energy Policy 186
Department of Energy Fiscal Year 2012 Program Office Highlights 138
Deep Underground Science and Engineering Laboratory at Homestake 155
Deepwater Offshore Wind Technologies 159
Distributed Wind 182, 184
Energy Research and Subsidies 151
Enriched Uranium Tails at Paducah 147
Environmental:
  Impact of Fracking 151
  Management 172
Fiscal Responsibility 132
Fossil Energy 192
Fracking 158
Fuel Cells 183
Geothermal Funding 162
Global Energy Race 150
H-Canyon 193
High-Priority Experiments 156
Highlights of the Fiscal Year 2012 Budget Request 132
Hydrogen 194
  Technologies 145
  And Fuel:
    Cell Technologies 176
    Cells 182
Leading in the Global Clean-Energy Economy 131
Loan:
  Guarantee Program 172
    Credit Subsidies 167
  Guarantees for Advanced Technology Automobiles 157
Mechanical Insulation Program 187
Mississippi River Level 157
Nuclear:
  Energy and Energy Security 153
  Fuel Rods and Dry Cast Storage 170
  Safety and Security 132
Oak Ridge Cleanup 189
Office of Environmental Management Budget and Nuclear Cleanup 164
Rural Implementation 186
Savannah River Site Pensions 195
Science Labs 191
Small Modular Reactors 169
Solar:
  Energy Technology Program 177
  Technology Prices/Subsidies 146
Spent Nuclear Fuel Storage 166
State Environmental Agency Directors Support Fiscal Year 2012 Funding Appropriation for U.S. Department of Energy's Nuclear Cleanup Work 199
Strategic Petroleum Reserve 154, 192
Supporting Groundbreaking Science 131
Water Power Program 174
Western Area Power Administration Transmission 184
Yucca Mountain 163
  Nuclear Waste 154

NATIONAL NUCLEAR SECURITY ADMINISTRATION

Additional Committee Questions 112
Export Control Regulations 119
Four-Year Effort 115
Implementing the President's Nuclear Security Agenda 98
Improving the Way National Nuclear Security Administration Does Business 99
Investing in the Future 97
Material Consolidation 116
Naval Reactors Facility, Idaho National Laboratory 120
Small Modular Reactors Program 122

Page

Technological Surprise 116
Uranium Downblending 122

DEPARTMENT OF THE INTERIOR

Bureau of Reclamation

Additional Committee Questions 58
Administrative Cost Savings and Management Efficiencies 31
Aging Infrastructure 80
Allocations Without Earmarks 39
Bay-Delta Interagency Plan 82
CALFED 85
California Bay-Delta Restoration Fund 32
Cedar Rapids, Iowa 52
Central:
    Utah Project Completion Act 24
    Valley Project Restoration Fund 32, 84
Chickamauga Lock 35
Climate Change 81
Continuing Authorities Program 47
Fiscal:
    Responsibility 21
    Year 2012 Planned Activities 32
Funding:
    Decisions 50
    Harbor Deepening 45
Harbor Maintenance Trust Fund 33
Highlights of the Fiscal Year 2012 Request for Water and Related Resources 28
Hydropower 23
Imperial, Coachella, and Metropolitan Water 87
Indian Water Rights:
    Settlement 77
    Settlements 31
Inland Waterway Trust Fund 36
Investing in the Future 21
Kennebec River 43
Lake Powell/Lake Mead 87
Levee Certification 42, 52
Mississippi River and Tributaries Project 40
Mni Wiconi 79
Needs Assessment 79
Odessa Subarea Special Study 89
Operation and Maintenance 80
Passaic River Basin 49
Policy and Administration 31
Principles and Guidelines 80
Quagga Mussel 88
Rural Water 79, 89
San Joaquin River Restoration 86
    Fund 32
Secure Water 81
South of Delta Water Allocations 83
Title XVI Program 82
2010 Accomplishments 20
Upper Mississippi River Navigation 53
Water and Related Resources 28
Yellowstone Intake Diversion Dam 42

○