

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2011

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

NONDEPARTMENTAL WITNESSES

[CLERK'S NOTE.—At the direction of the subcommittee chairman, the following statements received by the subcommittee are made part of the hearing record on the Fiscal Year 2011 Energy and Water Development Appropriations Act.]

DEPARTMENT OF DEFENSE—CIVIL

DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS—CIVIL

PREPARED STATEMENT OF THE SAN MATEO COUNTY HARBOR DISTRICT

OYSTER POINT MARINA/PARK BREAKWATER RECONFIGURATION

The San Mateo County Harbor District requests your support for a fiscal year 2011 appropriation of \$400,000 to the U.S. Army Corps of Engineers Continuing Authorities section 107 account to complete this vital project, which will facilitate the first new water transit service on San Francisco Bay and essential waterborne emergency response capability serving the northern San Francisco Peninsula. Through this project, the breakwater entrance has been widened to enable safe, fast, and comfortable access by new ferryboat service to and from the Marina serving east San Francisco Bay.

Completion of the project requires installation of wave attenuators and adaptive management to dissipate wave energy now entering the Marina's berthing area because of the entrance widening. This last task will provide increased protection to berthed vessels from southeasterly storm surges and protection of Marina facilities and property.

Oyster Point Marina/Park is located in the city of South San Francisco, and is operated for the city by the Harbor District under a Joint Powers Agreement. Oyster Point was designated by the San Francisco Bay Area Water Emergency Transportation Authority (WETA) as the initial expansion terminal facility for WETA's new regional ferry service on San Francisco Bay. This is due to the significant employee base working near the Marina in and around South San Francisco in life science industries. There are currently around 25,000 employees within a 4.5 mile radius from the Marina, which is forecasted to double by 2015. Many of these workers commute over the Bay bridges and contribute, and are adversely affected by, traffic congestion and air pollution. Water transit is an economically and environmentally viable alternative.

Additionally, the Marina has been identified as a vital component of WETA's emergency response plan for San Francisco Bay. The breakwater project including the wave attenuators is required to accommodate rapid waterborne emergency response activities, expanded vessel traffic, improve vessel access and safety, and new ferry traffic.

NORTHERN HALF MOON BAY SHORELINE IMPROVEMENT PROJECT

The San Mateo County Harbor District requests your support for a fiscal year 2011 appropriation of \$100,000 to the U.S. Army Corp of Engineers Continuing Authorities section 111 account for this project. Project goals are (a) to halt shoreline erosion now threatening the Coast Highway, which, as the only coastal artery in the region, is a homeland security concern as evidenced by the recent tsunami advisory for the California coast; (b) to enable restoration of anchorage area to the only designated Harbor of Refuge between San Francisco and Monterey Bay; (c) to restore public shoreline access and use adjacent to a major metropolitan area; (d) to demonstrate beneficial sand replenishment methods that may have broader environmentally sound applicability; and (e) overall, to insure that the Federal Pillar Point Harbor breakwater performs as intended.

The Pillar Point Harbor breakwater was built around 1960 to create a harbor of refuge for the commercial fishing fleet and other vessels. While serving its primary function, the breakwater has caused erosion of the adjacent beach and bluff areas by preventing sand movement along the shoreline and by scouring the area next to the breakwater. This shoreline erosion has increased over time, destroying one road and threatening California Highway 1 and several structures, and causing loss of a heavily used public beach. A July 2009 Army Corps of Engineers Initial Appraisal concluded that there is sufficient cause for Federal interest in a shoreline improvement project, which is supported by government agencies and the public.

PILLAR POINT HARBOR, CALIFORNIA

The San Mateo County Harbor District requests your support for a fiscal year 2011 appropriation of \$2.2 million to the U.S. Army Corps of Engineers Operation and Maintenance account to complete storm damage repairs to the Federal breakwater at Pillar Point Harbor. Completion of repairs already in progress will restore breakwater integrity and navigation safety to a designated critical Harbor of Refuge vital for the fishing industry, waterborne commerce, recreational boating, and local and regional economies.

Breakwater-caused shoreline impacts south of the breakwater are adversely affecting adjacent State highway safety, causing loss of public beach use, and affecting shoreline property, and must be addressed by a demonstration project. The recent tsunami advisory for the California coast highlighted the need for the proposed action, especially as State Highway 1 is the only traffic artery on this stretch of coast available for emergency response needs. This project element will address damage prevention or mitigation along the northern open-ocean shoreline of Half Moon Bay that are attributable to construction of the Federal breakwater.

The eroding beach shoreline fronts on Monterey Bay National Marine Sanctuary waters, which are administered for this sanctuary under agreement by the Gulf of the Farallones National Marine Sanctuary. Project performance will show how human activities can be sustained without causing adverse impacts on Sanctuary resources.

This project thus addresses urgent Federal concerns with navigation safety, homeland security, marine resource protection, and public use, and will complete work already begun.

 PREPARED STATEMENT OF THE AMERICAN SHORE & BEACH PRESERVATION ASSOCIATION

I am Mayor Harry Simmons of Caswell Beach, North Carolina and President of the American Shore & Beach Preservation Association. ASBPA appreciates this opportunity to provide written testimony to the Senate Energy and Water Appropriations Subcommittee on the fiscal year 2011 budget of the Corps of Engineers. Over the years, the Appropriations Committees, and Congress as a whole, have been extremely supportive of what is known as the Federal shore protection program. We are very grateful for the many times you stood up to what has seemed like the never-ending efforts of one administration after another to cripple or terminate this program.

The Federal coastal restoration program represents our Nation's commitment to responsible coastal stewardship. Our coasts are the gateway to America. They provide the seagoing and intracoastal water highways which carry most of America's commerce. They are the home to hundreds of animal and plant species that are not likely to be found elsewhere. They sustain tens of thousands of middle-class and service worker jobs which, together with taxes on business profits, bring billions of dollars into the Federal Treasury each year.

This administration has been far more willing to discuss and budget for coastal programs and projects than at any time since 1995. That is indeed refreshing. However, the recommendation the President has made in his fiscal year 2011 budget of approximately \$55 million is only one-tenth of what ASBPA's national survey shows as the need for \$460 million for the Federal cost-share of what is needed to fund authorized shoreline projects and studies. Inevitably and regrettably, this optimal funding number increases each year that we have done this analysis. The Federal Government has not provided its share of the cost of studies and projects while non-Federal sponsors have their 35 to 50 percent share in hand because they have set aside funds in advance.

Following are our recommendations for funding some of the national programs promoting coastal stewardship. They are not listed in priority order. ASBPA hopes the subcommittee will give consideration to each of these requests. Thank you for considering our views. We look forward to continuing to work with the subcommittee on the funding and effectiveness of coastal programs.

NATIONAL PLANNING CENTERS OF EXPERTISE (GI)

The Corps of Engineers designated six national Planning Centers of Expertise and identified their roles in support of plan formulation and complex technical evaluations associated with plan formulation. These Planning Centers of Expertise provide specialized planning talent to enhance and supplement the capabilities of the districts. They include Deep Draft Navigation and Small Boat Harbors, Inland Navigation, Ecosystem Restoration, Coastal Storm Damage Reduction, Flood Risk Management, and Water Management and Reallocation Studies.

ASBPA has found that the Coastal and Storm Damage Reduction Planning Center of Expertise (Coastal PCX) has been extremely helpful to Districts and their customers and has increased the quality of the Corps work product and re-instilled confidence on the part of local sponsors in the Corps of Engineers. In fiscal year 2009, Congress designated some funding allocated to the Planning Support Program (GI account) for the 6 centers. In fiscal year 2010, the Senate bill designated funding specifically for the Coastal PCX. This was not carried over in conference.

ASBPA Request.—\$1,500,000 for the 6 PCX's as a separate line item under the GI account. No funding is included in the President's budget request.

WATER RESOURCE PRIORITIES REPORT (GI)

Section 2032 of WRDA 2007 provides the Corps of Engineers with the direction and authority to examine risk assessment and risk reduction in the broadest and yet most practical approach imaginable. We understand the Corps has requested but not received funding from Congress to do the report.

ASBPA Request.—\$2 million to undertake what is likely to be a 2-year effort to meet the mandate of section 2032. No funding is included in the President's budget request.

SECTION 2038—NATIONAL SHORELINE EROSION CONTROL DEVELOPMENT PROGRAM (CG)

Section 227 of WRDA 1992 created a program to test new technologies that will improve the performance of Federal beach restoration projects and reduce their cost. Section 2038 of WRDA section 2038 moved the section 227 program into the section 103 Small Shoreline Protection Projects Continuing Authorities Program. The President has earmarked every dollar of the funding he requested for section 103 projects, and not one of those dollars is requested for the Shoreline Erosion Control development program.

ASBPA Requests.—\$8,975,000 to plan, construct, and/or monitor at least 9 demonstration projects. No funding is included in the President's budget request.

REGIONAL SEDIMENT MANAGEMENT RESEARCH PROGRAM (O&M)

RSM is not a faster way to plan and execute water resources projects; it is a better way. It is a systems-based approach that solves sediment-related issues through integrated management of littoral, estuarine, and riverine sediments and projects to achieve the type of balanced and sustainable approach that is lacking when planning and funding is done on a project-by-project basis. RSM will be a major factor in protecting environmental resources while also bringing efficiencies and greater effectiveness that would otherwise not be achievable.

ASBPA Request.—\$9 million to continue Federal, State, and local cooperative RSM efforts in almost a dozen States. The President has requested \$2 million for this program.

REGIONAL SEDIMENT MANAGEMENT PROGRAM AUTHORIZED BY SECTION 2037 OF WRDA
2007 (CG)

This is now known as the section 204 program and is separate from the RSM research program above. This program enables the Corps to do at least two things that the Research program cannot do: (1) Construction RSM projects; and (2) Cooperate with States that have initiated their own RSM studies.

ASBPA Request.—\$15 million to fund the planning and construction phases of RSM projects from New England to California. There is no funding included in the President's budget request.

NATIONAL COASTAL MAPPING PROGRAM (GI)

This is an interagency effort to survey the U.S. shoreline on a recurring basis to support regional sediment management, construction, operations and maintenance, and regulatory functions in the coastal zone. With this data, governmental entities at all levels will be better able to manage America's coastal resources.

ASBPA Request.—\$13 million to complete the first survey of the entire U.S. shoreline of the lower 48 States. The President has requested \$7 million for this program.

COASTAL FIELD DATA COLLECTION PROGRAM (GI)

Without good data, there can be no project planning for the present and no systems planning for the future. CFDC includes the Corps' Field Research Facility which obtains data on longer-term coastal processes, the Wave Information Study to develop and analyze new surge and wave data. This line item also includes several other programs such as SWIMS, PILOT, and MORPHUS.

ASBPA Request.—\$6,600,000 to complete construction of projects and continue monitoring and evaluation of completed projects. The President has requested \$1.4 million for all of the programs under this heading.

COASTAL DATA INFORMATION PROGRAM (O&M)

This is the first year the President has proposed funding a separate line item. Nevertheless, this program was established in 1975 and has now been deployed at over 142 stations and has archived 200 GB of wave duty. The CDIP also contains information that is accessed daily by the Navy, Coast Guard, Marines, as well as those commercial fisherman and others in the private sector.

ASBPA Request.—\$5 million. The President's budget request contains \$3 million for this line item, which does not permit to expand to the east coast.

NATIONAL SHORELINE MANAGEMENT STUDY (GI)

Authorized by WRDA 1999, this study will provide the first detailed report since 1971 on which sections of the U.S. shoreline are accreting and which are eroding. Without this basic information, none of us knows how serious a problem coastal erosion is.

ASBPA Request.—\$500,000. The President has requested \$375,000 for this study.

NATIONAL HURRICANE PROGRAM (GI)

This program is a cooperative effort with FEMA. The studies provided by the National Hurricane Program (NHP) help State and local communities establish evacuation plans by determining the probable effects of a hurricane; predicting public response to the threat and advisories, and identifying appropriate shelters. Specifically, NHP conducts hazard and vulnerability analyses for coastal communities considering different types of storm threats. This includes an assessment of storm surge and wind impacts; existing road and other transportation systems, population (e.g., demographics, behavior analysis) and shelters. This information helps officials determine where individuals are most likely to go when evacuating from a storm.

The NHP assists coastal communities by developing evacuation zones, which helps determine where and when the public should be ordered to evacuate as a storm approaches. This recommendation is negotiated among decisionmakers within each community. Once the evacuation zones are established, the NHP provides each community with corresponding evacuation maps and suggested clearance times for the various types of storm categories. The communities determine how to utilize these tools and recommendations, in developing their evacuation plans.

ASBPA Request.—\$3 million as a separate line item in O&M. It is currently part of the National Emergency Preparedness Program and was allocated \$1 million from that program in fiscal year 2010.

FLOOD CONTROL AND COASTAL EMERGENCIES (FCCE)

According to the President's budget justification for this important category of funds: "FISCAL YEAR 2011 DISASTER PREPAREDNESS: This activity consists of functions required to ensure that USACE activities are ready to provide baseline response to disasters and emergencies . . . Planning and preparedness funding should be sought as part of the regular budget process, instead of relying on emergency supplementals. Recent earthquakes, Nor'easters, ice storms and tsunamis illustrate the need for preparedness funding and the ability to provide trained staff and resources immediately after or even prior to an event." ASBPA agrees with the need to include FCCE funding in the regular appropriations bill. Unfortunately, this has not been the case in recent years. When emergencies arise, the Corps has no money on hand to deal with them and must wait for a Supplemental Appropriations bill for that purpose.

ASBPA Request.—\$50 million. The President has requested \$30 million which is substantially below his fiscal year 2010 request.

PREPARED STATEMENT OF THE 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 \$29,150,000 contained in the proposed budget for fiscal year 2011, to the U.S. Army Corp of Engineers' capability of \$56,238,000, and the Mississippi River Levee maintenance allocation be increased from the proposed \$7,582,000 to \$20,270,000.

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, (sec. 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 \$240 million allocated for the entire Mississippi River and Tributaries (MR&T) project. We request that be increased to the Corp's capabilities of \$550 million.

Since the Mississippi River and Tributaries 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 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 Congress to increase funding to the Corp of Engineers in fiscal year 2011, to insure that the Corp 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 construction.

PREPARED STATEMENT OF THE BOARD OF LEVEE COMMISSIONERS FOR THE YAZOO-MISSISSIPPI DELTA

These are changing times for this country's flood control community and those whom they seek to protect. As you in your wisdom consider such weighty matters as Levee Certification coupled with FEMA's new mapping initiative, the Clean Water Act, new Objectives, Principles and Standards for the Corps of Engineers and a related Executive order, a new WRDA bill and 2011 funding for the Mississippi River and Tributaries Project, we urge you to do so with one guiding principle: First do no harm.

As you craft a new approach to flood control activities for the 21st century, we urge you not to lose sight of the successes of the 20th and what they have meant to this country. The land in and around the Mississippi River Valley is among the most fertile and bountiful on earth. Not only is it home to the salt-of-the-earth men and women of the Nation's heartland, but within it is produced a significant slice

of the U.S. export pie—the food and fiber that feed and clothe this Nation and the rest of the world.

You in this body and we in the flood control community are its stewards and as we move forward, we must do so always keeping in mind our duty to protect it. Update the Clean Water Act, but maintain its critical Navigable Waters clause; write new guidelines and standards, but avoid any radical departure from what has worked; enact a new WRDA bill, but enact one whose principal theme is to preserve and protect.

We are also keenly aware of the fiscal tightropes which must be walked in this country's current economic environment. Every dollar is critical and every expenditure must be prioritized. But what priority trumps the protection of our people and the wealth they produce? What role of government is more critical?

The administration proposes 2011 funding for the MR&T, truly one of this Nation's success stories with a virtually unmatched benefit to cost ratio, at \$240 million, an amount far less than you appropriated for 2010 and an amount even farther less than the Corps of Engineers' capability. But the final word is that of Congress, and we urge you to fund the MR&T umbrella of needed public works at the Corps capability level of \$550 million.

As a local levee board, our first priority should be and is the protection of the lives and livelihoods of our people. Simply put, the Mainline Mississippi River Levee makes life and development possible within the Mississippi Delta. Therefore, we ask you to fund Mississippi River levees construction at \$56.238 million and their maintenance at \$20.270 million.

Our levee board is proud to have been the sponsor of the Upper Yazoo Projects, one of the most successful such endeavors in the country, given testament by the fact that it faces absolutely no environmental opposition. To advance its completion, we urge that you appropriate \$13.3 million.

Mississippi's four flood control reservoirs have proven to be remarkably successful structures, but they are aging and we request the appropriation of a total of \$54.113 million for their maintenance.

Also of primary importance to us is the Delta Headwater Project, which helps to prevent our Delta streams from filling with soils eroded from the hills. We ask that it be funded at \$23.2 million.

The other investigations, construction projects and maintenance efforts of importance to our levee district are as follows. We ask they be funded in 2011 at their respective Corps of Engineers capability levels:

- Channel Improvements—\$59.646 million.
- Big Sunflower River—\$2.2 million.
- Main Stem—\$25,000.
- Yazoo Basin Reformulation—\$1.6 million.
- Channel Maintenance—\$89.484 million.
- Revetments and Dikes—\$72.328 million.
- Vicksburg Harbor Maintenance—\$750,000.
- Big Sunflower Maintenance—\$1.684 million.
- Main Stem Maintenance—\$3.4 million.
- Tributaries—\$1.017 million.
- Whittington Auxiliary Channel—\$400,000.

PREPARED STATEMENT OF THE BIG BEAR MUNICIPAL WATER DISTRICT

The Big Bear Municipal Water District appreciates the opportunity to submit this testimony for the record in support of the \$650,000 request in the fiscal year 2011 appropriations for the Santa Ana River and Tributaries, Big Bear Lake, CA for the general investigations budget of the U.S. Army Corps of Engineers. The Big Bear Municipal Water District is an independent special district of the State of California, responsible for the overall management of Big Bear Lake, Southern California's Premier recreational Lake.

Located 100 miles east of Los Angeles, the Big Bear Lake recreational area attracts visitors from across southern California and beyond. Annually, the greater Big Bear area receives over 6.5 million visitors from around the world. The Lake is a unique recreational and natural resource, offering some of the most beautiful high elevation scenery in southern California. The lake has a depth of 72 feet, and is about 7 miles in length and about 1.5 miles wide at its greatest width.

The problems at Big Bear Lake are very similar to the more publicized environmental problems at Lake Tahoe. The purpose is to implement a project for aquatic habitat restoration in Big Bear Lake. Most of the Lake's environmental problems are created by the activities in the Federal owned lands in the surrounding water-

shed. The removal of nutrient laden sediment that has accumulated is critical to improving the Lake's water quality, controlling nuisance aquatic plant growth, enhancing the wildlife habitat, and maintaining boating and fishing access. The Lake is on the EPA's 303d list of impaired water bodies, with listings for nutrients (phosphorous and nitrogen), invasive aquatic plants, and mercury. Big Bear Lake dry year TMDL's for nutrients and invasive aquatic plants have been developed. Removal of sediment loads is a major remediation requirement. Big Bear Lake is adjacent to the Pacific Flyway and is home to numerous waterfowl, including the wintering bald eagle. Most recently, the Lake is threatened by the introduction of the invasive species, Quagga Mussel.

We are in the 8th year of an ecosystem restoration feasibility study being conducted by the U.S. Army Corps of Engineers, general investigations program. We are seeking funds for completion of the feasibility phase. The water district is the cost-sharing sponsor and has met all our local cost sharing responsibilities.

The Congressional Interests for this feasibility study are Senator Barbara Boxer, Senator Dianne Feinstein and Congressman Jerry Lewis (R-41st).

Our Contact information is: Mr. Scott Heule, General Manager, Big Bear Municipal Water District, P.O. Box 2863, Big Bear Lake, CA 92315-2863. Telephone: 909-866-5796, Fax: 909-866-6485, e-mail Address: sheule@bbmwd.org.

RECOMMENDATION FOR YOUR CONSIDERATION

We support the \$650,000 request to provide in the U.S. Army Corps of Engineers General Investigation Budget, for fiscal year 2011 to advance the Santa Ana Tributaries, Big Bear Lake, CA aquatic habitat restoration study being conducted by the Corps. Thank you.

PREPARED STATEMENT OF THE LITTLE RIVER DRAINAGE DISTRICT

Dear Senator Dorgan: My name is 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 Project (MR&T) 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 Congress in 1928 and still not completed is returning back to our Nation \$25 for every dollar expended. What a good investment.

The \$4.6 billion of stimulus funding provided the Corps of Engineers in 2009 was greatly appreciated. Several needed projects were commenced and completed which otherwise would not have occurred. Much more needs to be done to provide the Mississippi Valley the flood protection its citizens need and the extreme need to modernize our inland waterway system.

Many jobs would be realized and many products would be purchased throughout the entire Mississippi Valley and the watersheds which discharge into this system if an aggressive modernization of our Inland Waterway was put in motion. We must put people back to work and this will help considerably. The stimulus funds helped, however, there still remains room for more funding. This District supports the request of the Mississippi Valley Flood Control Association for funding levels at \$550 million for the MR&T Project. This project as well as all of the subsidiary projects within it are returning back to the U.S. Treasury a minimum of \$6 for each \$1 invested.

Many of our locks and dams are over 70 years old and we are sitting idly by letting them deteriorate further. The current administration pledged to improve the infrastructure in this Nation. We are waiting to see that promise fulfilled. These much needed improvements are investments in this Nation's future. When they are fully underway many jobs will be created in the private sector thus serving a two-fold purpose. Please hear us and help us improve this vital part of our Nation.

We believe Congress needs to intervene and reverse the trend of OMB, this administration and of past administrations. We have not seriously invested in our waterway infrastructure for decades but we must. Local economies will be affected

positively by these investments. Local labor will be used. Local businesses will provide needed materials. This would be a major boost to our economy. Each year OMB and recent administrations have submitted low budget amounts for this worthwhile project and we have had to rely on Congress to “fix” the problem. You should not be burdened with this task. Someone needs to inform OMB what projects need funding which are assets to our Nation and not a liability.

Investing in our waterways is a great way to stimulate the economy, which currently is very much needed, and at the same time be building and making investments into a system for the future which will return back more dollars than expected. We petition you to give this vital industry of our Nation a strong endorsement and do all you can to ensure our waterways system and carriers stay competitive with our foreign competitors.

I have the following additional comments for your benefit and consideration.

INFRASTRUCTURE

The current administration stated often during its campaign and after that a genuine concerted priority would be to invest in this country’s future, its infrastructure. When are we going to commence?

Our Federal road systems are crumbling. We must not wait for bridges to fail as recently happened in Minnesota before we act. We need to move forward across our entire Nation upgrading our Federal highway system in its entirety. This will take long term commitments not just a “stimulus” now and then. We need to put a plan in place, work the plan and fund it properly each year until we have completed the task.

Are we truly interested in fuel independence—a cleaner environment—a better economy? If we are why don’t we have someone step forward to be a champion for our “waterways” system? We have locks and dams which are an average of 50 years old. Parts are having to be fabricated since they are no longer manufactured. Tows are having to be broken up to pass because our locks and dams are too short and not modernized. Many undue delays are occurring. This does not permit our carriers to compete fairly with the foreign shipping industry. We must start a concerted effort to improve this part of our Nation’s infrastructure.

Locks, dams, hydropower, recreation, flood control, water supplies and all other benefits from the construction, operation and maintenance of these features on our rivers benefit our entire Nation not just a few. It is a national asset and it must be operated and funded as a national benefit. Private industry can not and will not operate this system fairly and in the best interest of our Nation.

Environmentally moving goods and freight throughout our Nation via of water is much cleaner, less intrusive, and far more environmentally acceptable than highways or rail. Noise pollution, air pollution, land pollution are substantially less when we move the mass amount of goods possible by water.

Fuel efficiency comparison is a “no brainer”. For instance 1 gallon of fuel moves 155 tons of freight by truck, 413 tons of freight by rail and 576 tons of freight by water. What part of this do we not understand? Why can’t we realize such an endeavor would reduce much of our fuel needs and take much pressure off our highway system?

Economically investing wisely in our waterways effects much of our Nation—not just a regional portion. Consider it being possible to board a waterborne vessel at the Port of New Orleans, Louisiana and one can touch 36 States of this Nation and 6 provinces in Canada without ever getting onto land. Over 75 percent of our population lives along water. Only two of our major cities are not on water, namely, Atlanta, Georgia and Denver, Colorado. With the many ports throughout the Mississippi Valley, which network many more people inland, it is evident many local economies will be benefited when investments are made in our water infrastructure.

We seem to be ready, willing, and capable of improving the infrastructure of other nations at the expense of our taxpayers but seem reluctant to do the same for our Nation. It is far past time to reward the American taxpayer with a return for the money he provides each year and stop using those funds to benefit those nations who are our enemies.

It has been estimated our waterway infrastructure needs \$100 to \$120 billion to modernize, upgrade and be made functional. Lets start now by setting a 10 year goal to modernize that system and then plan to meet that goal and exceed same when possible. Currently we are spending \$13 billion each month to fight terrorism in Iraq and Afghanistan which is more spent in 1 year of what is needed to bring our waterways up to a finished plan. Perhaps we could cut the 10 year plan to even 5 years by eliminating much of that funding, lets try.

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 in the past. We trust you will hear our pleas once more and act accordingly.

PREPARED STATEMENT OF THE CITY OF FLAGSTAFF, ARIZONA

Chairman Dorgan, Ranking Member Bennett, and distinguished members of the subcommittee, thank you for allowing me to testify on behalf of the city of Flagstaff, Arizona in support of \$8 million in the Army Corps of Engineers budget for the Rio de Flag flood control project in fiscal year 2011. The Rio de Flag flood control project is critically important to the city, to northern Arizona, and, ultimately, to the Nation.

As you may know, Mr. Chairman, with this subcommittee's help over the last several fiscal years, Rio de Flag received more than \$20 million to continue construction on this important project. We are extremely grateful that the subcommittee boosted this project well above the President's request every year, and we would appreciate your continued support for this project in fiscal year 2011.

Like many other projects under the Army Corps's jurisdiction, Rio de Flag received no funding in the President's fiscal year 2011 budget, although the Corps has expressed a capability of \$8 million to continue construction on the project and have been unwavering in their support of it. We are hopeful that the subcommittee will fund the Rio de Flag project at \$8 million when drafting its bill in order to keep the project on an optimal schedule.

Flooding along the Rio de Flag dates back as far as 1888. The Army Corps has identified a Federal interest in solving this long-standing flooding problem through the Rio de Flag, Flagstaff, Arizona—Feasibility Report and Environmental Impact Study (EIS). The recommended plan contained in this feasibility report was developed based on the following opportunities: (1) flood control and flood damage reduction; (2) environmental mitigation and enhancement; (3) water resource management; (4) public recreation; and (5) redevelopment opportunities. This plan will result in benefits to not only the local community, but to the region and the Nation.

The feasibility study by the Corps of Engineers has revealed that a 500-year flood could cause serious economic hardship to the city. In fact, a devastating 500-year flood could damage or destroy approximately 1,500 structures valued at more than \$450 million. Similarly, a 100-year flood would cause an estimated \$100 million in damages. In the event of a catastrophic flood, over one-half of Flagstaff's population of more than 60,000 would be directly impacted or affected.

In addition, a wide range of residential, commercial, downtown business and tourism, and industrial properties are at risk. Damages could also occur to numerous historic structures and historic Route 66. The Burlington Northern and Santa Fe Railway (BNSF), one of the primary east-west corridors for rail freight, could be destroyed, as well as U.S. Interstate 40, one of the country's most important east-west interstate links. Additionally, a significant portion of Northern Arizona University (NAU) could incur catastrophic physical damages, disruptions, and closings. Public infrastructure (e.g., streets, bridges, water, and sewer facilities), and franchised utilities (e.g., power and telecommunications) could be affected or destroyed. Transportation disruptions could make large areas of the city inaccessible for days.

Mr. Chairman, the intense wildfires that have devastated the West during the last several years have only exacerbated the flood potential and hazard in Flagstaff. An intense wildfire near Flagstaff could strip the soil of ground cover and vegetation, which could, in turn, increase runoff and pose an even greater threat of a catastrophic flood.

In short, a large flood could cripple Flagstaff for years. This is why the city believes it is important to ensure that this project remains on schedule and that the Corps is able to utilize its expressed capability of \$8 million in fiscal year 2011 for construction of this flood control project.

In the city's discussions with the Corps, both the central office in Washington and its Los Angeles District Office also believe that the Rio de Flag project is of the utmost importance and both offices believe the project should be placed high on the subcommittee's priority list. We are hopeful that the subcommittee will consider this advice and also place the project high on its priority list and fully fund the project at \$8 million for fiscal year 2011.

It is important to note that the city has secured the necessary property rights to begin construction, and the city is prepared to assume the costs for the non-Federal portion of the cost-sharing agreement.

The city of Flagstaff, as the non-Federal sponsor, is responsible for all costs related to required Lands, Easements, Rights-of-Way, Relocations, and Disposals (LERRD's). The city had already secured the necessary property rights to begin construction in 2004. Implementation of the city's Downtown and Southside Redevelopment Initiatives (\$100 million in private funds) are entirely dependent on the successful completion of the Rio de Flag project. The Rio de Flag project will also provide a critical missing bike/pedestrian connection under Route 66 and the BNSF Railroad to replace the existing hazardous grade crossings.

Mr. Chairman, the Rio de Flag project is exactly the kind of project that was envisioned when the Corps was created because it will avert catastrophic floods, it will save lives and property, and it will promote economic growth. In short, this project is a win-win for the Federal Government, the city, and the surrounding communities.

Furthermore, the amount of money invested in this project by the Federal Government and the city—approximately \$54 million (as authorized by WRDA)—will be saved exponentially in costs to the Federal Government in the case of a large and catastrophic flood, which could be more than \$450 million. It will also promote economic growth and redevelopment along areas that are currently underserved because of the flood potential.

In conclusion, the Rio de Flag project should be considered a high priority for this subcommittee, and I encourage you to support full funding of \$8 million for this project in the fiscal year 2011 Energy and Water Development Appropriations bill. Thank you in advance for your consideration.

PREPARED STATEMENT OF THE PORT OF HARLINGEN—HARLINGEN, TEXAS

HISTORY AND BACKGROUND

Port Harlingen, also known as the Rio Hondo Port, is on the Arroyo Colorado and Farm Road 106, on the eastern city limits of Harlingen. The channel connecting Arroyo Colorado with the Gulf Intracoastal Waterway was completed and dedicated on February 27, 1952. It is 12 feet deep and 125 feet wide and has a turning basin measuring 400 by 600 feet. By 1962 the port was handling \$2.5 million in commerce. In 1983 commodity shipments amounted to 455,430 short tons, and they increased to 801,003 short tons in 1984, when the port housed 10 industries with commercial leases. In 1989 Port Harlingen handled 728,954 short tons.

The port is located 4 miles east of Harlingen, Texas on Highway 106. It is 25 miles west of Mile Marker 646 on the Gulf Intracoastal Waterway, which stretches from the Mexican border at Brownsville, Texas, along the entire coast of the Gulf of Mexico to St. Marks, Florida. The Gulf Intracoastal Waterway provides over 1,300 miles of protected waterway. The Harlingen channel is maintained to a width of 125 feet and a depth of 12 feet and is supplied by the Arroyo Colorado, a fresh water river.

PROJECT DESCRIPTION

The project is located in the vicinity of Rio Hondo and Harlingen in Cameron and Willacy Counties, Texas. The project consists of a channel 25.8 miles long. The channel extends with the main channel of the GIWW through the Arroyo Colorado to the turning basin at Harlingen. It also included a barge-mooring basin near the channel's junction with the GIWW. Authorized channel dimensions are 12 feet by 125 feet. One hundred percent of all the sugar (180,000 tons), 95 percent of all commercial fertilizer products and 30 percent of all gasoline products for south Texas is shipped through the Port of Harlingen. The Corps of Engineers has determined a need for levee work in Harlingen Channel that were destroyed during recent storms in Texas.

ECONOMIC IMPACT OF THE PORT OF HARLINGEN

The Port of Harlingen provides efficient and economical transportation to points as close as Corpus Christi and as far as the Great Lakes. Terminal docks and other facilities ease shipments into and out of the Port of Harlingen, and over 150 acres of on-and-off channel sites are available for industrial firms requiring economical transportation and attractive land lease rates. The port is also an important link in the comprehensive transportation network of the Rio Grande Valley of Texas. Southern Pacific Company rail lines at the port, along with switching capabilities

with Union Pacific Railways, keep products moving to Texas locations and on throughout the U.S. and Mexico. Additionally, as was stated in the project description above, 100 percent of all the sugar (180,000 tons), 95 percent of all commercial fertilizer products and 30 percent of all gasoline products for south Texas is shipped through the Port of Harlingen.

COMMUNITY AND INDUSTRY SUPPORT

One industry the Port of Harlingen is involved in is sugar. The Port of Harlingen Authority has bid and is building a \$3.8 million sugar transfer building to load barges of sugar for shipment to Louisiana. The sugar mill shipped 171,962 short tons of sugar to Louisiana in 2006–2007 and should ship in excess of 180,000 short tons in 2007–2008. The mill cannot ship raw sugar by rail because the finish mills in Louisiana are not currently capable of receiving raw sugar by rail, and instead are organized to ship finished sugar by rail. To ship the sugar by truck would take over 6,878 truckloads at 4 times the cost. If this occurs, recent economic studies have determined that it would put the mill out of business.

Additional industries present at the Port are Agro Alliance, Helena Chemical, UAP and Wilber Ellis, which have facilities at the port or down stream that handle 99 percent of all of the commercial liquid and dry fertilizer for south Texas. CMX also has a terminal at the port that handles much needed concrete sand shipped from Victoria and Cement shipped in from Mexico.

Valero Energy Corporation, which once actively sent gas and diesel fuel to the Port of Harlingen by barge, also has projects underway at the Port. In October 2005, Valero finished a pipeline to the valley to service all three terminals and stopped all barge traffic. In July 2006 they started barging (about two barges a month) ultra low sulfur diesel to the valley. They are currently shipping the entire ultra low sulfur diesel by barge and the traffic is almost back to levels achieved before their pipeline was built.

WHAT WE NEED FROM THE SUBCOMMITTEE IN FISCAL YEAR 2011

The administration's fiscal year 2011 budget did not include funding for the levee work needed in Harlingen Channel. As deliberations on the Energy and Water Subcommittee on Appropriations commence, we would appreciate your help in securing the Corps capability of \$805,000 so that this project can move forward and ensure that the Gulf Intracoastal Waterway—Port of Harlingen received the important levee work identified by the USACE.

PREPARED STATEMENT OF THE BRAZOS RIVER HARBOR NAVIGATION DISTRICT— FREEPORT, TEXAS

HISTORY AND BACKGROUND

Port Freeport is an autonomous governmental entity authorized by an act of the Texas Legislature in 1925. It is a deep-draft port, located on Texas' central gulf coast, approximately 60 miles southwest of Houston, and is an important Brazos River Navigation District component. The port elevation is 3 to 12 feet above sea level. Port Freeport is governed by a board of six commissioners elected by the voters of the Navigation District of Brazoria County, which currently encompasses 85 percent of the county. Port Freeport land and operations currently include 186 acres of developed land and 7,723 acres of undeveloped land, 5 operating berths, a 45 feet deep Freeport Harbor Channel and a 70 feet deep sink hole. Future expansion includes building a 1,300-acre multi-modal facility, cruise terminal and container terminal. Port Freeport is conveniently accessible by rail, waterway and highway routes. There is direct access to the Gulf Intracoastal Waterway, Brazos River Diversion Channel, and State Highways 36 and 288. Located just 3 miles from deep water, Port Freeport is one of the most accessible ports on the gulf coast.

PROJECT DESCRIPTION

The fiscal year 2002 Energy and Water Appropriations signed into law included a \$100,000 appropriation to allow the United States Army Corps of Engineers (USACE) to conduct a reconnaissance study to determine the Federal interest in an improvement project for Freeport Harbor, Texas. The USACE, in cooperation with the Brazos River Harbor Navigation District as the local sponsor, has completed that study. The report indicates that "transportation savings in the form of National Economic Development Benefits (NED) appear to substantially exceed the cost of project implementation", thus confirming "a strong Federal interest in conducting

the feasibility study of navigation improvements at Freeport Harbor". Congress has to date appropriated over \$ 4 million for the study phase of the channel improvement project. This last phase of study for PED will move the project to completion of the feasibility report and ready the channel for construction.

Port Freeport has the opportunity to solidify significant new business for Texas with this improvement project. In addition, the improvement to the environment by taking a huge number of trucks off of the road, transporting goods more economically and environmentally sensitive by waterborne commerce is infinitely important to the community, the State, and the Nation. Moreover, the enhanced safety of a wider channel cannot be overstated. The emergence of an LNG facility at Port Freeport—a joint venture of Conoco-Philips and Cheniere Energy further solidifies the importance of keeping this critical waterway at optimum depth and width.

ECONOMIC IMPACT OF PORT FREEPORT

Port Freeport is 13th in foreign tonnage in the United States. It is responsible for augmenting the Nation's economy by over \$9 billion annually and generating over nearly 24,000 jobs in Texas, over 11,000 direct. It also augments the economy by providing annual State and local taxes of over \$150,000 and an additional of over \$300 million in Federal tax revenues. Its chief import commodities are bananas, fresh fruit and aggregate while top export commodities are rice and chemicals. The port's growth has been staggering in the past decade, becoming one of the fastest growing ports on the gulf coast. Port Freeport's economic impact and its future growth is justification for its budding partnership with the Federal Government in this critical improvement project.

Examples of existing tenants at the Port include:

Dole Fresh Fruit.—Dole has a weekly sailing arriving at Port Freeport with green fruit and other exotic fruits, mainly from Guatemala and Honduras. Dole has been a tenant of Port Freeport for the past 23 years, occupying lease sites comprising of 12 acres and has just renewed its lease for another 5 years. There are approximately 450 jobs associated with this operation.

Chiquita Fresh North America.—Chiquita is very similar to the Dole operation. Chiquita also has a weekly sailing and has been a tenant of Port Freeport for the past 12 years. There are about 400 jobs associated with this operation.

Turbana Banana & Isabella Shipping.—Turbana and Isabella, divisions of Uniban, based in Colombia import 2,000 pallet loads of green fruit and other exotic fruits into Port Freeport weekly. The fruit is processed in a newly built chiller, which the Port undertook and built 2 years ago at a cost of \$7 million. In addition to their import activities, they also export general cargo back weekly to ports in Costa Rica and Colombia. Since moving to Freeport 2 years ago, Turbana has increased their business 38 percent. This highly labor-intensive company accounts for 500+ jobs. Turbana and Isabella recently announced a significant expansion of their Freeport operations that will double their cargo throughput within the next 4 months.

American Rice Inc./Grupo SOS.—As a 20-year tenant of the Port, this company has the largest rice milling operation in the United States located on water. They are one of the largest suppliers to Iraq in the effort to help rebuild their economy. American Rice was recently acquired by the Spanish firm Grupo SOS, based in Madrid.

Grupo SOS recently announced an expansion project at the Port Freeport site totaling \$150 million dollars. Once all the new facilities are built, Port Freeport will be the distribution center for all North America, sending product out by ship, truck, and rail to Mexico, Canada, the Tropics, and South America as well as throughout the United States. With the expansion, there will be approximately 2,000 jobs associated with this operation.

Freeport LNG/ConocoPhillips.—Port Freeport was successful 4 years ago in attracting Freeport LNG to a site on Quintana Island, owned by the Port. This facility, the first new liquefied natural gas plant to be built in the United States in the last 25 years, will begin operations in the first quarter of 2008. The volume of natural gas imported in Phase I will be equal to 10 percent of the total gas production of the State of Texas and Phase II will equal over 20 percent of the entire State's production from this one terminal. The docks at the terminal are designed to handle the largest LNG ships being designed for the future, will require a wider ship channel which will need to be maintained for these larger ships. The investment in the LNG facility is \$1 billion. The importance of this facility cannot be understated. With gas prices spiking at \$13/bcf (from \$3) recently, local petrochemical plants had to shut down some production units, as an example, Dow Chemical Freeport purchases \$1 million of LNG daily to fire up their various production facilities.

In addition to the Port tenants listed above there are numerous U.S. and international chemical and crude processing facilities in the immediate area. Some of the larger international corporations utilizing the Freeport ship channel are as follows:

Dow Chemical.—A diversified chemical company that offers a broad range of products and services to customers in more than 175 countries, helping them to provide everything from fresh water, food and pharmaceuticals to paints, packaging and personal care products. Dow has annual sales of \$49 billion and employs 43,000 people worldwide, with 4,000 full time employees in the Texas operations and another 3,000 contract employees. Texas Operations in Freeport is Dow's largest integrated site where 44 percent of Dow's products are sold in the United States and more than 21 percent of Dow's products sold globally are manufactured. Dow's Freeport Marine Terminal and Operations (FMTO) uses the Freeport Harbor channel and handles the movement of 100 different Dow products at 15 billion pounds annually. Marine vessels transport 46 percent of Dow's volume through Dow docks on the Freeport channel.

ConocoPhillips owns and operates a 247,000 bpd refinery at Old Ocean, Texas, that relies heavily on marine operations for the delivery of crude oil and other feedstock supplies; and, to a lesser extent, for product shipments. In particular, ConocoPhillips utilizes both its own proprietary terminal and the Teppco crude oil terminal at Port Freeport. Maintaining and improving the Port Freeport channel is critical to overall refinery operations.

Seaway Crude Pipeline Company is a partnership between wholly owned subsidiaries of TEPPCO and ConocoPhillips. The pipeline transports crude oil from the Texas gulf coast to Cushing, OK, a crude distribution point for the central United States and a delivery point for the New York Mercantile Exchange (NYMEX). The Seaway system is a critical link in the crude oil supply chain for Central and Midwest refining centers. Seaway also provides marine terminaling and storage services for Texas gulf coast area refineries. TEPPCO is the operator of Seaway Crude Pipeline. The Freeport, TX, marine terminal is the origin point for the 30-inch diameter crude pipeline. Three large diameter lines carry crude oil from Freeport to the Jones Creek Tank Farm, which has 6 storage tanks capable of handling approximately 3.3 million barrels of crude. This private terminal also acts as the receiving terminal for crude delivered to the Bryan Mound Strategic Petroleum Reserve operated by the Department of Energy.

Schenectady Chemical, Shintech, Air Liquide, Nalco, Rhodia, Rhone-Poulenc, S F Sulfur Corp and Silica Products are other large international companies in the immediate area. All of these companies depend on, in some form or fashion the delivery or dispatch of product, crude or feedstock by vessel. There is well over \$100 billion in assets in the immediate area, assets that are in the ground, provide for 30,000 direct jobs supplying our country with everything from gasoline for our vehicles to baby diapers.

Recent Port improvements include the Velasco Terminal, which was launched last October as our first major container terminal. This facility, presently under construction will boast a berthing line of 2,400 linear feet with 90 acres of backland for development. Phase I, building Velasco terminal will cost \$35 million dollars and should be completed in 18 months. We have three, large international companies submitting proposals to act as terminal operators. Overall build out cost could go as high as \$200 million and is designed to handle as many as 700,000 containers.

DEFENSE SUPPORT OF OUR NATION

Port Freeport is a strategic port in times of National Defense of our Nation. It houses a critically important petroleum oil reserve—Bryan Mound. Its close proximity to State Highways 36 and 288 make it a convenient deployment port for Fort Hood. In these unusual times, it is important to note the importance of our ports in the defense of our Nation and to address the need to keep our Federal waterways open to deep-draft navigation.

COMMUNITY AND INDUSTRY SUPPORT

This proposed improvement project has wide community and industry support. The safer transit and volume increase capability is an appealing and exciting prospect for the users of Freeport Harbor and Stauffer Channel. The anticipated positive benefit to cost ratio that was indicated from the Corps of Engineers reconnaissance study firmly solidified the Federal interest.

WHAT WE NEED FROM THE SUBCOMMITTEE IN FISCAL YEAR 2011

The administration included no funding for PED for the widening and deepening project for Port Freeport; therefore, we need an add on of \$500,000 to initiate PED.

The administration did include \$3,538,000 in O&M for maintenance of Freeport Harbor; however, that amount falls short of the Corps capability. Maintenance dredging of Federal harbors is a Federal responsibility; therefore, we respectfully request the additional funding of \$7,374,000 to restore the harbor to its authorized depth. The Corps will need to continue to move this important project through the system on an optimum schedule and most cost-efficient timeframe for the Federal Government and the local sponsor. We respectfully request that the full amount of the Corps capability for PED and O&M be included in the House mark-up.

Not only is the widening and deepening project currently under consideration as a feasibility study by the Corps needed to ensure the continued growth of the port and surrounding industries, we need continued support from the Federal Government to insure our channel is maintained at its Federal authorized depth of 45 feet to assure our current customers that we will continue to be able to serve them.

PREPARED STATEMENT OF THE CHAMBERS COUNTY-CEDAR BAYOU NAVIGATION
DISTRICT, TEXAS

HISTORY AND BACKGROUND

The Rivers and Harbor Act of 1890 originally authorized navigation improvements to Cedar Bayou. The project was reauthorized in 1930 to provide a 10 foot deep and 100 foot wide channel from the Houston Ship Channel to a point on Cedar Bayou 11 miles above the mouth of the bayou. In 1931, a portion of the channel was constructed from the Houston Ship Channel to a point about 0.8 miles above the mouth of Cedar Bayou, approximately 3.5 miles in length. A study of the project in 1971 determined that an extension of the channel to project Mile 3 would have a favorable benefit to cost ratio. This portion of the channel was realigned from mile 0.1 to mile 0.8 and extended from mile 0.8 to Mile 3 in 1975. In October 1985, the portion of the original navigation project from project Mile 3 to 11 was deauthorized due to the lack of a local sponsor.

In 1989, the Corps of Engineers, Galveston District completed a Reconnaissance Report dated June 1989, which recommended a study for an improvement to a 12 foot by 125 foot channel from the Houston Ship Channel Mile 3 to Cedar Bayou Mile 11 at the State Highway 146 Bridge. Subsequently, at the completion of the feasibility report, the preferred plan recommendation was to construct a 10 foot by 100 foot channel. The feasibility report was approved by both the ASA of Civil Works for the Army Corps of Engineers and the Office of Management and Budget.

The Texas Legislature created the Chambers County-Cedar Bayou Navigation District in 1997 as an entity to improve the navigability of Cedar Bayou. The district was created to accomplish the purpose of section 59, Article XVI, of the Texas Constitution and has all the rights, powers, privileges and authority applicable to Districts created under chapters 60, 62, and 63 of the Water Code—Public Entity. The Chambers County-Cedar Bayou Navigation District then became the local sponsor for the Cedar Bayou Channel.

PROJECT DESCRIPTION AND REAUTHORIZATION

Cedar Bayou is a small coastal stream, which originates in Liberty County, Texas, and meanders through the urban area near the eastern portion of the city of Baytown, Texas, before entering Galveston Bay. The bayou forms the boundary between Harris County on the west and Chambers County on the east. The project was authorized in section 349 of the Water Resources Development Act 2000, which authorized a navigation improvement of 12 feet deep by 125 feet wide from mile 2.5 to mile 11 on Cedar Bayou. Corps studies have indicated that the preferred plan is to widen the channel to 100 feet and deepen it to 10 feet which is the current plan of action.

JUSTIFICATION AND INDUSTRY SUPPORT

First and foremost, the channel must be improved for safety. The channel is the home to a busy barge industry. The most cost-efficient and safe method of conveyance is barge transportation. Water transportation offers considerable cost savings compared to other freight modes (rail is nearly twice as costly and truck nearly four times higher). In addition, the movement of cargo by barge is environmentally friendly. Barges have enormous carrying capacity while consuming less energy, due to the fact that a large number of barges can move together in a single tow, controlled by only one power unit. The result takes a significant number of trucks off of Texas highways. The reduction of air emissions by the movement of cargo on barges is a significant factor as communities struggle with compliance with the

Clean Air Act. Several navigation-dependent industries and commercial enterprises have been established along the commercially navigable portions of Cedar Bayou. Several industries have docks at the mile markers that would be affected by this much-needed improvement. These industries include: Reliant Energy, Bayer Corporation, Koppel Steel, CEMEX, US Filter Recovery Services and Dorsett Brothers Concrete, to name a few.

PROJECT COSTS AND BENEFITS

Congress appropriated \$100,000 in fiscal year 2001 for the Corps of Engineers to conduct the feasibility study to determine the Federal interest in this improvement project. The study indicated a benefit to cost ratio of the project of 2.8 to 1. The estimated total cost of the project is \$16.8 million with a Federal share estimated at \$11.9 million and the non-Federal sponsor share of approximately \$4.9 million. Total annual benefits are estimated to be \$4.8 million, with a net benefit of \$3 million. Congress thus far has appropriated nearly \$1.7 million for this project.

It has also become an important project for the Port of Houston Authority—the Nation's busiest port in foreign tonnage. They hope to institute a container on barge facility as soon as this project is accomplished. We would appreciate the subcommittee's support of the required add of the \$100,000 to initiate construction of this important improvement project. The users of the channel deserve to have the benefits of a safer, most cost-effective Federal waterway.

CURRENT STATUS

In July 2006, the project feasibility report was accepted and approved by Assistant Secretary of the Army John P. Woodley and OMB as a viable, economically justified and environmentally accepted project. The project is ready for construction. The Federal Government has already invested nearly \$1 million for the studies to justify this project and the local sponsor has advanced the total local share. We are ready to begin construction.

PREPARED STATEMENT OF THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY; STATE OF NEW JERSEY, DEPARTMENT OF TRANSPORTATION; STATE OF NEW YORK, EMPIRE STATE DEVELOPMENT CORPORATION

Endorsed By: APM Terminals; Association of Bi-State Motor Carriers, Inc.; Board of Commissioners of Pilots of the State of New York; Business Council of New York State; Cashman Dredging Company; ConocoPhillips Bayway Refinery; CSX Corporation; Donjon Marine Co., Inc.; Environmental Defense Fund; Hudson County Chamber of Commerce; Great Lakes Dredge and Dock Company; Greater Maritime Port Council of New York/New Jersey and Vicinity; I.L.A. Local 1235; International Union of Operating Engineers Local 25 Marine Division; Maher Terminals; Manhattan Chamber of Commerce; Maritime Association of the Port of NY/NJ; Marine Engineers Beneficial Association; Maritime Trades Department AFL-CIO; Matrix Development Group; Nation'sPort; NJ Sandy Hook Pilots Association; New Jersey Alliance for Action; New Jersey State AFL-CIO; New York Sandy Hook Pilots; New York Shipping Association; New York-New Jersey Port Promotion Association; Newark Regional Business Partnership; Norfolk Dredging Company; Norfolk Southern Corporation; Seafarers International Union; Weeks Marine Inc.

This subcommittee has consistently supported the Nation's navigation system, including the Port of New York and New Jersey. We thank you for your continued support. Now more than ever, we are in need of your assistance as we near the end of the construction of the New York and New Jersey Harbor Deepening Project (HDP), but face a \$33 million reduction from last year's funding level. The HDP has received strong financial support since 2004, which has enabled the Federal Government and us to improve the infrastructure required to handle cargo growth in our region and the Nation. In order to keep this top priority project on schedule, we respectfully ask that the President's request for the NY & NJ Harbor Deepening Project be augmented to \$80,000,000, which is less than the level that was appropriated this fiscal year. We also respectfully request added funds totaling \$5,000,000 to construct the vital Liberty State Park wetlands restoration project, \$1,500,000 to move forward on other essential Hudson-Raritan Estuary (HRE) restoration projects, and \$50,838,000 to address critically important operations and maintenance needs.

We understand the fiscal constraints facing the subcommittee and the Nation, but would like to emphasize that the Federal investment in the Port has yielded great returns. New York and New Jersey marine terminals handled over 4 million TEU's

in 2009. This freight moved throughout the region and to most States in the continental United States accounting for approximately 13 percent of the Nation’s containerized imports and exports and 22 percent of the Nation’s import of refined petroleum products such as heating oil. The Port supports more than 269,000 on and off-terminal jobs locally and nation-wide, and the NY/NJ port industry contributed \$5.8 billion in local, State and Federal tax revenues. The Port continues to serve as a critical economic engine in these trying times of an economic downturn.

The Port and its partners are mindful of the need to balance commerce with protection of the environment. The Port Authority has dedicated funds to expand its rail capacity in New York and New Jersey in order to reduce truck congestion and associated air emissions. The funds also financed the acquisition of environmentally sensitive land for preservation and studies to identify and prevent sources of contamination from entering the harbor estuary. The Port Authority has also spent over \$20 million for emission-offset programs associated with the HDP. In 2010 we will have reduced 796 tons of NO_x emissions annually in the Harbor due to these efforts; by 2013, we will have reduced NO_x emissions by over 1,100 tons per year. These improvements and emissions reductions are a legacy to this region; their benefits continuing long after the HDP is completed. Over 40 million cubic yards of dredged material will be removed in association with the HDP. To date 100 percent of the material dredged has been beneficially reused within the region to improve the Historic Area Remediation Site, enhance artificial reefs within the coastal waters of New York and New Jersey, and support upland activities such as landfill closures and brownfield remediation projects. Additionally, terminal operators have voluntarily installed electric cranes, switched to ultra-low sulfur diesel and replaced cargo-handling equipment with cleaner models—a strong signal of private sector commitment toward greening the Port. In addition the Port Authority, together with its sister agencies and port partners, has developed and is implementing a Clean Air Strategy for the Port of New York and New Jersey. The HDP, including our partnership with the Corps, is the centerpiece of a commitment to make this important American gateway internationally competitive while restoring the harbor estuary and protecting our environment. We invite all members of the subcommittee and staff to visit the Port to learn more about its role in the environment and the U.S. transportation system. Below are our comments on the fiscal year 2011 budget request. We respectfully request that the subcommittee appropriate additional funds for the specific projects as discussed below.

Construction	President’s Fiscal Year 2011 Budget	Port Request
New York and New Jersey Harbor	\$57,000,000	\$80,000,000
Liberty State Park	5,000,000
TOTAL	57,000,000	85,000,000

New York and New Jersey Harbor.—This project was authorized by section 101(a)(2) of WRDA 2000 (Public Law 106–541). We respectfully request that the President’s request for the NY and NJ Harbor Deepening Program be augmented to \$80,000,000, which while higher than the budget request would be 12 percent lower than the appropriated level for the current year. The continuing NY and NJ Harbor Deepening Project will improve transportation efficiency and benefit the national markets served by this port. In order to complete the 50-foot deepening of the pathways to the container-handling facilities in the Harbor by fiscal year 2013 and reap the full benefits of the Federal Government’s investment, a significant number of contracts must be awarded over the next 2 years. Project slippage will have serious negative impacts on maritime commerce and the regional and national economy. The President’s budget allows for the construction of this project to continue, but does jeopardize the timeline at a critical juncture. The project currently stands near the 50 percent completion mark. With only 3 years remaining in the schedule, reduced funding at this time hampers construction efficiencies, delays the benefits of sections already constructed, and subjects the project to possible further delays and increased cost as the price of labor and construction inevitably rises in the next years. Any hindrance to the timely completion of this project risks the possible delay of the realization of first year economic benefits to the Nation in the range of \$140 million. In addition, a delay in funding could mean that this nationally important project would not be completed by the opening of the Panama Canal’s third set of locks. For these reasons, we urge adoption of our \$80,000,000 funding recommendation, which is a continuation of the funding levels the subcommittee has approved in previous fiscal years. This approach is consistent with the stated goal of the ad-

ministration of placing priority and resources on the completion of Corps projects already underway.

Liberty State Park.—We also request \$5,000,000 to execute the Project Partnership Agreement with the State of New Jersey and construct the critical wetlands restoration project within Liberty State Park. The project was authorized for construction in WRDA 2007. This project will both restore critical habitat within the estuary and also provide significant public access and education opportunities.

Continuing Authority Program (CAP).—We request that CAP sections 1135 and 204 are funded to fund the following ongoing projects within the Jamaica Bay complex: Plumb Island, NY (\$500,000) and Spring Creek, NY (\$50,000).

Surveys (Studies)	President's Fiscal Year 2011 Budget	Port Request
HRE, Hackensack-Meadowlands, NJ	\$200,000	\$250,000
HRE, Lower Passaic River, NJ	200,000	250,000
HRE New York & New Jersey	200,000	1,000,000
TOTAL	600,000	1,500,000

HRE-Hackensack Meadowlands.—We respectfully request an increase in funding of an additional \$50,000 for a total of \$250,000 to continue design work. The area's wildlife habitat preserves are threatened by dwindling open marshes. In April 2003, the Corps executed the FCSA with the NJ Meadowlands Commission, and initiated the feasibility study.

HRE-Lower Passaic.—An increase in funding by \$50,000 for a total of \$250,000 is needed for the HRE-Lower Passaic River to complete a Draft Comprehensive Restoration Plan for the entire lower 17-mile watershed. The plan is critical component of the integrated Remedial Investigation/Feasibility Study underway with EPA as a pilot project of the joint Corps-EPA Urban Rivers Restoration Initiative. Many changes have occurred over the last year and it is important that the positive momentum gained not be lost on this critical project.

HRE (overall), NY and NJ.—There is a critical need to increase funding to \$1,000,000 to allow the Corps to complete the Comprehensive Restoration Plan (CRP) that will outline the unified vision of a restored estuary based on specific science based and stakeholder endorsed ecosystem targets. It will also continue the feasibility study and programmatic Environmental Impact Statement, which is needed to implement the CRP. This study, as well as the Hackensack Meadowlands and Lower Passaic River studies, were authorized by House Resolution dated April 25, 1999 and are critical components to achieving the common stakeholder vision of a World Class Harbor estuary that recognizes ecological restoration as being of equal importance with economic development. This project directly aligns with other administration initiatives and focus for the Corps in fiscal year 2011.

Operation and Maintenance	President's Fiscal Year 2011 Budget	Port Request
Newark Bay, Hackensack and Passaic Rivers, NJ	\$100,000	\$10,200,000
Project Condition Surveys, NJ	1,506,000	1,953,000
Raritan River to Arthur Kill Cut-off, NJ	100,000	1,450,000
Raritan River, NJ	80,000	120,000
Buttermilk Channel, NY	8,600,000	10,000,000
East River, NY	2,800,000	3,350,000
East Rockaway Inlet, NY	200,000	1,750,000
Eastchester Creek, NY	150,000	150,000
Flushing Bay and Creek, NY	100,000	100,000
Hudson River Channel, NY	100,000	200,000
Jamaica Bay, NY	120,000	120,000
New York and New Jersey Channels, NY	6,150,000	6,150,000
New York Harbor, NY	3,796,000	3,998,000
Portchester Harbor, NY	60,000	60,000
Project Condition Surveys, NY	1,928,000	2,092,000
Westchester Creek, NY	100,000	100,000
New York Harbor, NY and NJ (Drift Removal)	7,200,000	7,900,000
New York Harbor, NY and NJ (Prevent Obstructive Deposits)	1,045,000	1,145,000
TOTAL	34,135,000	50,838,000

Operation & Maintenance.—Maintenance projects are critical to the commerce, navigation and security of this National Priority port system, its channels and the Nation. Billions of public and private dollars are continuing to be spent to deepen the Port's channels and improve landside infrastructure. The considerable investment in deepening the network of channels is devalued if the system is not adequately maintained, especially in one of the most highly utilized ports in the country. Additionally, the risk of groundings will increase. The new budget continues the unfortunate pattern of past budgets that enable only partial channel maintenance, leaving significant areas and in some cases whole shipping lanes at inefficient and potentially unsafe depths. The Port is the Nation's busiest petroleum port, and the Arthur Kill (under NY and NJ Channels) is critical to that trade, which serves the greater NY/NJ Metropolitan area and much of the Northeast. Channel maintenance in this National Strategic Port is needed to support the industry and military. Maintenance also protects and perpetuates the Federal infrastructure investment. We identified several critical projects with pressing channel safety concerns and it is important to state for the record that this part of the fiscal year 2011 budget is insufficient to meet the practical needs of commerce. The irony is that the budget proposes using only around 50 percent of the estimated Harbor Maintenance Trust Fund receipts for the fiscal year. As such the Harbor Maintenance Trust Fund is fully capable of covering the full cost of dredging in our port and a good many others. To provide additional perspective, a January 2010 report from the Congressional Research Service (7-5700) notes that the NY/NJ port is a "large net generator" of Harbor Maintenance Tax revenue. It also illustrates how the NY/NJ port is one of most efficient ports when measured in HMTF maintenance expenditures per ton of cargo. We respectfully request the budget be increased as shown in the above list.

Conclusion.—The Port of New York and New Jersey continues to be a major international gateway for the Nation and a significant producer of Harbor Maintenance Tax revenue to support the Nation's port system. Furthermore we would be remiss if we did not highlight the importance of continuing contracts as a valuable tool in managing the complexities of channel deepening and maintenance. National projects, like the NY and NJ Harbor Deepening Project, are better served with 2-year continuing contracts supported by a 5 and 10 year Corps priority project schedule. The Corps' Civil Works Program, coupled with public and private sector investments, has served the Nation's economic and security interests well for the better part of two centuries. We are proud of our part in that history. We commit to continuing our productive partnership with the Federal Government and to ensuring that continued development and use of the Port and its supporting infrastructure is balanced between commerce and the environment.

PREPARED STATEMENT OF THE CITY OF MARICOPA (ARIZONA)

Chairman Dorgan, Ranking Member Bennett, and distinguished members of the subcommittee, thank you for allowing me to testify in support of \$150,000 for the city of Maricopa, Arizona for a Flood Plain Management Services (FPMS) study under General Investigations for the Army Corps of Engineers in the fiscal year 2011 Energy and Water Development bill.

Maricopa is a small but thriving community 35 miles south of Phoenix. Incorporated in 2003 with a population of approximately 1,000 people, Maricopa is now a burgeoning community of more than 40,000 and growing at the rate of approximately 200 people per month. Maricopa is located in Pinal County, which is one of the fastest growing regions in one of the fastest growing States in the Nation. With this newfound growth has brought increased risk of death and the loss of public and private property due to flooding of the Santa Cruz River that splits the city. Mitigating this potential flood hazard is critical to this area's growth and prosperity. A major flood today would devastate homes, businesses, schools, infrastructure and more. It is only a matter of time before another devastating flood hits this area. Flood control improvements are urgent and necessary to protect the public health and safety.

The Santa Cruz River Basin consists of 8,200 square miles in southern Arizona and 400 square miles in Sonora, Mexico. The Basin has a long history of damaging floods. Damages included a broad range of categories, including agricultural, commercial and residential structures, utility lines, and transportation facilities. These flooding problems have been studied repeatedly by Federal, State, and local agencies, but no comprehensive solution has been implemented due to a lack of economic viability.

The Bureau of Reclamation had previously carried out appraisal investigations of the Santa Cruz River in 1965 when the city and areas within the basin were largely

agricultural. It became apparent at that time that the municipal and industrial water-supply needs of the Santa Cruz River Basin were of far greater magnitude and urgency than had been previously estimated.

In 1976, Congress, under the authority of the Flood Control Act of 1938 funded a Corps of Engineers/Bureau of Reclamation study of the Lower Santa Cruz River from the Red Rock area to the river's confluence with the Gila River. The Corps was tasked with evaluating the flood control problems, and the Bureau of Reclamation was tasked with evaluating the development potential of water resources. The results of this study, released in August 1983 found no economically justified solution. Benefits to cost ratios (BCR) ranged from 0.3 to 0.7 for three different alternatives for diversion of floodwaters from the Greene's Canal area to the Tat Momolikot Dam reservoir. In October 1983, a flood along the Santa Cruz River caused over \$45 million (1994 dollars) in damages, including extensive damage to many of the channel and dike improvements constructed by the agricultural flood control districts in the area. A similar devastating flood occurred in 1993. At this time, the city of Maricopa had very little residential or commercial infrastructure and less than 1,000 residents.

After the floods, the Corps reevaluated the alternatives in their study and were able to develop a BCR of 1.03. Since the 1983 and 1993 floods, construction of the Central Arizona Project lateral canals, and associated irrigation infrastructure, have added additional potential damages from future events due to changes in the hydraulic characteristics of the flood prone areas. In addition, extreme land subsidence is extensive over portions of the Santa Cruz River Basin.

In June 1989, Pinal County requested a flood control study of the Lower Santa Cruz River from the Corps of Engineers. The Corps released the Lower Santa Cruz River Feasibility Analysis Summary Report in September 1994. This report developed several alternative plans and found that the best alternative was still diversion to the Tat Momolikot Dam with a BCR of 1.05. The 1994 report concluded that additional engineering work was needed due to geotechnical issues in the area and also the altered hydraulic characteristics of the area due to the Central Arizona Project and irrigation district infrastructure. The study was terminated without a recommendation.

With the recent influx of residential growth into Maricopa and most of Pinal County since 2001, the flood prone areas of the Lower Santa Cruz River had become candidates for development. Several large master planned residential projects have been proposed along the Lower Santa Cruz River from the Red Rock area to the city of Maricopa, which has, at this point, the largest and most expansive development. These projects have been planned in Maricopa, Casa Grande, and many other flood prone locations in Pinal County's Santa Cruz River Basin. The loss of life and property has increased exponentially since the Corps conducted its initial studies. The time to act is now.

Maricopa is one of the fastest growing communities in Arizona. By 2020, it is estimated to have nearly 200,000 residents. Similarly, other cities, such as Eloy and Casa Grande are expected to see similar growth of their communities. Larger communities will translate into larger damages and loss of life in the event of a catastrophic flood event. An FPMS study would help us begin to address this problem before its too late.

It is important to note that a large stakeholder group is being formed to work on a collaborative solution for this growing problem. Stakeholders include the city of Maricopa, the Ak-Chin Indian Community, the Gila River Indian Community, Pinal County, numerous irrigation and flood control districts, and the University of Arizona. Realizing the importance of this endeavor, the city of Maricopa has committed \$9 million over the next 3 years to begin this important project.

Therefore, I respectfully request that the subcommittee includes \$150,000 for the city of Maricopa, Arizona for a Flood Plain Management Services (FPMS) study under General Investigations for the Army Corps of Engineers in the fiscal year 2011 Energy and Water Development bill.

Thank you for the opportunity to testify, as well as your time and attention to this important matter.

PREPARED STATEMENT OF THE ASSOCIATION OF STATE FLOODPLAIN MANAGERS

The Association of State Floodplain Managers (ASFPM) is submitting comments on three items in the budget request: under Investigations—Planning Assistance to States and Flood Plain Management Services and under Operation and Maintenance—National (Levee) Flood Inventory.

ASFPM and its 29 Chapters represent over 14,000 State and local officials and other professionals who are engaged in all aspects of managing and mitigating flood risk to address the loss of life and property from natural hazards. These aspects include land management, hazard mitigation, mapping, engineering, planning, building codes and permits, community development, hydrology, forecasting, emergency response, water resources and insurance. Most of our members work with the Nation's 21,000 flood prone communities to reduce losses from all flood related hazards.

ASFPM strongly believes that the USACE can contribute significantly to better informed flood hazard reduction decisions in our Nation's communities through providing technical advice and assistance. As the Corps moves toward helping States and local governments with a comprehensive approach to flood risk management, the Flood Plain Management Services (FPMS) and Planning Assistance to States (PAS) programs are essential. For many years, these valuable programs have been funded at about one-half of their authorized levels. The budget request for fiscal year 2011 would continue that level of funding. The request for FPMS is \$8 million. The request for PAS is \$7 million. ASFPM recommends funding both programs at a significantly higher level and at their fully authorized amounts if possible.

We support the budget request of \$15 million for the National (Levee) Flood Inventory. We urge that the inventory proceed expeditiously and that it include not only Corps built, owned and maintained levees, but all levees. Information on the number and location of levees in the Nation and a general assessment of their condition is critical as the Congress and Federal Government move to develop a national levee safety program. Because of its importance to addressing the hazards to public safety and property associated with levee failure or overtopping, it is important that the levee inventory proceed with deliberate speed.

The Association of State Floodplain Managers appreciates this opportunity to share our views on these important Army Corps programs.

PREPARED STATEMENT OF THE STOCKTON PORT DISTRICT, CA

The Port of Stockton ("Port") appreciates the opportunity to submit this testimony for the record in support of the fiscal year 2011 appropriations for the U.S. Army Corps of Engineers Civil Works Operations and Maintenance and Construction General Programs. The funding amounts are detailed in the paragraphs below.

Stockton has an unemployment rate of 21.9 percent (Source: CA Economic Development Dept., Jan. 2010). San Joaquin County has an unemployment rate of 18.4 percent. With the highest home foreclosure rate in the Nation, this region continues to suffer the hardest impacts of the national and global economic recession.

The Port of Stockton is widely viewed as one of the primary economic engines for the recovery of this distressed region. The positive economic outlook for the Port includes introduction of new container facilities at the Port in year 2011, thanks to the DOT TIGER grant for marine highways. Significant developments are also expected for Rough and Ready Island. The Port has been, and will continue, to focus on jobs creation at a family wage level for this region.

The Port of Stockton's recovery, and the regional recovery, is dependent on adequate funding of the four projects shown below in the Army Corps of Engineers civil works budget.

The San Joaquin River—Stockton Channel is our highest priority appropriations request in the Corps O&M budget. Federal responsibilities include annual maintenance dredging of the Federal channel and maintaining existing riverbank protection. This project is consistently under funded so that the authorized 35-foot ship channel has been blocked at depths of 32–33 foot feet. These blockages, often last 6 months or more, have denied a stable 35-foot ship channel for much of the past 5 years. Past O&M appropriations have been primarily in the \$2.6 million to \$3.1 million range, insufficient for the State's largest inland port and fourth busiest California port.

An amount of \$9.8 million is requested for the San Joaquin River—Stockton Channel project in fiscal year 2011 to adequately maintain the ship channel at a safe year round Federal depth and satisfy additional State water quality requirements for environmental sampling, testing, and disposal of maintenance dredged material.

The San Francisco Bay to Stockton (John F. Baldwin and Stockton Channels) is our second highest priority request in the Corps Construction General budget. This \$141 million project would deepen the Stockton ship channel to 40-feet. The State Transportation Commission has designated this project for a \$17.5 million construction grant; construction must begin in year 2012. Last year, our appropriations request for \$2 million was zeroed out of the fiscal year 2010 budget for reasons un-

known to us. With a zero appropriation for the project, the Port must recapture the schedule, including possible reprogramming of funds.

Two million dollars in Construction General funding is requested for the San Francisco Bay to Stockton project in fiscal year 2011. We have recently added strong cost sharing partners with the Western States Petroleum Association, along with our long time partner, Contra Costa County.

The Rough and Ready Island Storm Water Drainage Project is our third priority request in the Corps Construction General budget. The current storm water system on Rough and Ready Island is obsolete and must be replaced. The EPA is demanding a replacement. Based on WRDA 2007, Public Law 110–114, section 5158, \$3 million is authorized for this storm water system, which includes drainage detention and lift facility. The project will also minimize environmental problems, increase flood protection and create more usable land for economic growth.

An amount of \$925,000 is requested in the Corps fiscal year 2011 Construction General budget for the Rough and Ready Island, Storm Water Drainage Project. This project is authorized in accordance with Public Law 102–580, 1992, section 219 Environmental Infrastructure and subsequent Water Resources Development Acts.

The Pinole Shoal, CA Management Study (Delta Long Term Management Strategy) is an ongoing study that we support with Contra Costa County and many regulatory resources agencies. Authorized in Public Law 108–447, page 905 of Conference Report (Consolidated Appropriations Act,) this study has been funded since fiscal year 2005. Funding would be used to develop and approve a joint agency permit and general regional water quality control board order for dredging and beneficial reuse of dredged material; implement a Delta Dredging and Reuse Management Team with a MOU, charter, and operating principles; develop regional disposal and reuse of dredged sediment alternatives; initiate a programmatic biological assessment, and conduct a pilot project. Fiscal year 2011 Federal funds would be used as follows: salaries \$300,000, A&E and professional service contracts \$2,200,000.

An amount of \$2.5 million is requested in the Corps fiscal year 2011 O&M budget for the Pinole Shoal, CA Management Study.

Thank you for your consideration.

PREPARED STATEMENT OF THE RED RIVER VALLEY ASSOCIATION

Mr. Chairman and members of the subcommittee, I am Wayne Dowd, President, and pleased to represent the Red River Valley Association, 629 Spring St., Shreveport, Louisiana. Our organization was founded in 1925 with the express purpose of uniting the citizens of Arkansas, Louisiana, Oklahoma and Texas to develop the land and water resources of the Red River Basin.

The resolutions contained herein were adopted by the Association during its 85th Annual Meeting in Shreveport, Louisiana, on February 18, 2010 and represent the combined concerns of the citizens of the Red River Basin area as they pertain to the goals of the Association. A summary of the civil works projects and requested funding is included in this testimony.

The President's fiscal year 2011 budget included \$4.9 billion for the civil works programs. This is a drastic 10 percent cut from what Congress appropriated in fiscal year 2010. The administration fails to recognize the Corps' critical role as stewards of our Nation's water resources, and the vital importance of our water resources infrastructure to our economic and environmental well-being. The problem is also how the administration distributes funds. A few projects received the full "Corps Capability" to the detriment of many projects that receive no funding. The \$4.9 billion level does not come close to the real needs of our Nation. A more realistic funding level to meet the existing needs of the civil works program is \$6 billion for fiscal year 2011. The traditional civil works programs remain at the low, unacceptable level as in past years. These projects are the backbone to our Nation's infrastructure for waterways, flood prevention, water supply, recreation and ecosystem restoration. We remind you that civil works projects are a true "jobs program" in that up to 85 percent of project funding is contracted to the private sector; 100 percent of the construction, as well as much of the architect and engineering work. Not only do these projects provide jobs, but provide economic development opportunities for our communities to grow and prosper, creating permanent jobs.

Congress did appropriate funding for the civil works program through the American Recovery and Reinvestment Act of 2009. The majority of those funds went toward backlog maintenance (O&M) at completed Corps projects, no construction funds were received in the Red River Valley. Many critical maintenance items were addressed; however, that should not be a reason to reduce the Corps' fiscal year

2011 budget. We have the opportunity to truly reduce our maintenance backlog, but a reduced Corps budget will allow those issues to increase and hinder our ability to catch up.

We want to point out that we appreciate the funding Congress enacted in fiscal year 2010 and that an appropriation bill was enacted in November 2009. We encourage Congress to increase the “water” share of the total Energy and Water bill closer to the \$6 billion Corps capability.

We have a serious issue for the J. Bennett Johnston Waterway O&M in the President’s budget. The administration allocated \$7,745,000 for fiscal year 2011, \$3,733,000 less than appropriated in fiscal year 2010 (\$11,478,000)! This drastic reduction will directly impact the ability to conduct maintenance dredging and the authorized 9 foot channel will not be maintained. It is difficult to understand why the administration would fund the O&M at the \$11 million range for 5 years and suddenly make a drastic reduction that will have such a negative impact on a Waterway that has yearly increased its tonnage. If the required funding level of at least \$11 million is not appropriated the Waterway may actually shut down to all traffic and industry will see the Waterway as unreliable and choose alternative modes of transportation, impacting ports and jobs.

A national issue that must be addressed is levee certification. FEMA has mandated that all levee systems go through a certification process. If a levee district does not meet their designated deadline their levee will be taken off the flood plain maps. This will greatly increase the current flood insurance paid by landowners and discourage economic development. The requirements of the engineering analysis for levee certification are cost prohibitive by most all districts. Considering that many of these levees were constructed over 80 years ago construction criteria then do not meet current methods and procedures. Additionally, levees have deteriorated and weathered over time. Levee districts can not be expected to absorb the expense to upgrade their levees to meet current criteria. There must be a national program to address this issue. It is too large an expense to be absorbed in the civil works underfunded budget. We recommend Congress address this issue and develop a program that would be funded through FEMA and executed by the Corps of Engineers and cost shared with levee districts.

We have great concerns over the issue of “earmarks”. Civil Works projects are not earmarks. Civil Works projects go through a process; reconnaissance study, feasibility study, benefit to cost ratio test, EIS, peer review, review by agencies, public review and comment, final Chief of Engineer approval, authorization by all of Congress in a WRDA bill and signed by the President. WRDA 2007 added an independent review of major projects. No other Federal program goes through such a rigorous approval process. Each justified project “stands alone”, are proven to be of national interest and should be funded by project. For most projects there is local sponsor cost sharing during the feasibility study, construction and for O&M. Those who have contributed, in most cases—millions of dollars—to the process, must have the ability to have a say for their projects to get funded. That voice is through their Congressional delegation. We believe that earmarks are not in the national interest, but it does not pertain to the civil works program. For civil works it is an issue of priority of projects to be funded and who will determine that, OMB or Congress. We hope Congress keeps their responsibility to set civil works priorities and to determine how its citizen’s tax dollars are spent.

The Inland Waterways Trust Fund (IWTF) is inadequately funded by the existing fuel tax rate. There is no doubt that something must be done to increase the revenue in the fund. The needs of the IWTF should be analyzed and determine what increase to the existing fuel tax would maintain the necessary income flow to keep projects funded from the Inland Waterway Trust Fund. The final proposal must be fair to tributary waterways and be applied equally to all industries using the waterways.

I would now like to comment on some of our specific requests for the future economic well being of the citizens residing in the four State Red River Basin regions.

Navigation.—The J. Bennett Johnston Waterway is living up to the expectations of the benefits projected. We are extremely proud of our public ports, municipalities and State agencies that have created this success. This upward “trend” in usage will continue as new industries commence operations. A major power company, CLECO, has invested \$1 billion in its Rodemacher Plant near Boyce, Louisiana, on the lower Red River and has started moving over 3 million tons of “petroleum coke” and limestone, by barge. This project is a reality and there are many more industries considering using our Waterway and locating at the ports.

You are reminded that the Waterway is not complete, 12 percent remains to be constructed, \$246 million. We appreciate Congress’ appropriation level in fiscal year 2010 of \$6,613,000. There is a capability for \$20 million of work, but we realistically

request \$12 million to keep the project moving toward completion, "J. Bennett Johnston Waterway (CG)".

Now that the J. Bennett Johnston Waterway is reliable year round we must address efficiency. Presently a 9-foot draft is authorized for the J. Bennett Johnston Waterway. All waterways below Cairo, Illinois are authorized at 12-feet, to include the Mississippi River, Atchafalaya River, Arkansas River and Gulf Intracoastal Waterway. A 12-foot channel would allow an additional one-third capacity, per barge, which will greatly increase the efficiency of our Waterway and further reduce transportation rates. This one action would have the greatest, positive impact to reduce rates and increase competition, bringing more industries to use waterborne transportation. We request a 1-year reconnaissance study be funded to evaluate this proposal, at a cost of \$100,000. Fact: Approximately 95 percent is already at 12-foot year round.

The feasibility study to continue navigation from Shreveport-Bossier City, Louisiana, into the State of Arkansas will be completed in CY 2012. This region of SW Arkansas and NE Texas continues to suffer major unemployment and this navigation project, although not the total solution, it will help revitalize the economy. Due to the time lapsed in the study the "freight rates" calculated a number of years ago they must be re-evaluated this year. We request funding of \$50,000 to conduct the re-evaluation of freight rates, "Navigation into SW Arkansas Study".

Flood Prevention.—What will happen when we ignore our levee systems? We know the Red River levees in Arkansas do not meet Federal standards, which is why we have the authorized project, "Red River Below Denison Dam, TX, AR & LA". Now is the time to bring these levees up to standards, before a major flood event.

We continue to consider flood control a major objective and request you continue funding the levee rehabilitation projects ongoing in Arkansas. Five of 11 levee sections have been completed and brought to Federal standards. The Red River Levee District (AR) is prepared to provide lands, easements and rights of way for the next major rehabilitation of the Lafayette County levees.

The levees in Louisiana have been incorporated into the Federal system; however, they do not meet current safety standards. These levees do not have a gravel surface roadway, threatening their integrity during times of flooding. It is essential for personnel to traverse the levees during a flood to inspect them for problems. Without the gravel surface the vehicles will cause rutting, which can create conditions for the levees to fail. A gravel surface will insure inspection personnel can check the levees during the saturated conditions of a flood.

Appropriations of \$12 million will construct one more levee section in Lafayette County, Arkansas and continue the rock surfacing of levees in Louisiana, "Red River Below Denison Dam, AR & LA".

Bank Stabilization.—One of the most important, continuing programs, on the Red River is bank stabilization in Arkansas and North Louisiana. We must stop the loss of valuable farmland that erodes down the river and interferes with the navigation channel. In addition to the loss of farmland is the threat to public utilities such as roads, electric power lines and bridges; as well as increased dredging cost in the navigable waterway in Louisiana. These bank stabilization projects are compatible with subsequent navigation into Arkansas and we urge that they be continued in those locations designated by the Corps of Engineers to be the areas of highest priority. We appreciated the congressional funding in past fiscal years and request you fund this project at a level of \$11.3 million in fiscal year 2011, "Red River Emergency Bank Protection".

Water Quality.—The Assistant Secretary of the Army (Civil Works), in October 1998, agreed to support a re-evaluation of the Wichita River Basin tributary of the project. The re-evaluation report was completed and the Director of Civil Works signed the Environmental Record of Decision. The plan was found to be economically justified. Then the ASA (CW) directed that construction would not proceed until a local sponsor was found to assume 100 percent of the O&M for the project. The 2007 WRDA bill included language that clarified that all aspects of this project will be at full Federal expense, to include O&M.

Over the past years there has been a renewed interest by the Lugart-Altus Irrigation District to evaluate construction of Area VI, of the Chloride Control Project, in Oklahoma. They have obtained the support of many State and Federal legislators, as well as the Oklahoma Governor in support of a re-evaluation report.

Total request for the "Chloride Control Project": \$8,300,000 for the Texas and Oklahoma areas.

Studies.—We have a number of General Investigation (GI) studies that have been funded and have local sponsors prepared to cost share feasibility studies. Some of those important studies include: Bossier Parish Flood Control Study, LA—\$250,000; Cross Lake Water Supply Study, LA—\$100,000; SE Oklahoma Water Resource

Study, OK—\$500,000; SW Arkansas Study, AR—\$50,000; Washita River Basin, OK—\$500,000 and Wichita River Basin, TX—\$100,000. These studies are important to have projects ready for future construction.

Operation & Maintenance.—Full O&M capability levels are not only important for our Waterway project but for all our Corps projects and flood control lakes. The backlog of critical maintenance only becomes worse and more expensive with time. We request that the Corps O&M projects be funded at the expressed, full Corps capability.

Thank you for the opportunity to present this testimony and project details of the Red River Valley Association on behalf of the industries, organizations, municipalities and citizens we represent throughout the four State Red River Valley region. The Civil Works program directly relates to national security by investing in economic infrastructure. If waterways are closed companies will not relocate to other parts of the country—they will move over seas. If we do not invest now there will be a negative impact on our ability to compete in the world market threatening our national security.

Grant Disclosure.—The Red River Valley Association has not received any Federal grant, sub-grant or contract during the current fiscal year or either of the two previous fiscal years.

RED RIVER VALLEY ASSOCIATION FISCAL YEAR 2011 APPROPRIATIONS CIVIL WORKS

[In thousands of dollars]

	Fiscal Year 2010 Approp	RRVA Fiscal Year 2011 Request	President Fiscal Year 2011 Budget	Local Sponsor Requirements
Studies (GI)				
Navigation into SW Arkansas: Feasibility		\$50		(ARRC)
Red River Waterway, LA—12 foot Channel, Recon		100		(RRWC)
Bossier Parish, LA	\$278	250		(Bossier Levee)
Cross Lake, LA Water Supply Supplement	90	50		(Shreveport)
SE Oklahoma Water Resource Study: Feasibility	233	500		(OWRB)
SW Arkansas Ecosystem Restoration: Recon Study	170	47		(ANRC/AR Game & Fish)
Cypress Valley Watershed, TX	90	175		(NETWD)
Sulphur River Basin, TX		1,000		(Sulphur Auth)
Washita River Basin, OK	171	500		(L)
Wichita River Basin above Lake Kemp, TX: Recon		100		(L)
Red River Above Denison Dam, TX & OK: Recon		100		(L)
Red River Waterway, Index, AR to Denison Dam		44		(?)
Mountain Fork River Watershed, OK & AR, Recon				(?)
Walnut Bayou, Little River, AR		100		(ANRC)
Little River County/Ogden Levee, AR, Recon		100		(ANRC)
Red River Waterway, Index to Denison, Bendway Weir				(?)
Construction General (CG)				
Red River Waterway: J. B. Johnston Waterway, LA	6,613	20,000	\$1,500	(RRWC)
Chloride Control Project, TX & OK Texas-7,500/Oklahoma- 800.	1,332	8,300		N/A
Red River Below Denison Dam; AR & LA	2,035	12,000		(Levee Districts)
Bowie County Levee, TX				
Red River Emergency Bank Protection	1,986	11,300		(Levee Dist.)
Big Cypress Valley Watershed, TX: Section 1135	1,450			(Jefferson)
Palo Duro Creek, Canyon, TX: Section 205		90		(Canyon, TX)
Millwood, Grassy Lake, AR: Section 1135	181	100		(ANRC)
McKinney Bayou, AR, PED				(?)
Miller County Levee, AR, Section 1135				(Miller Levee)
Operation and Maintenance (O&M)				
J. Bennett Johnston Waterway, LA	11,478	23,864	7,745	
Lake Kemp, TX—Total Need	311	817	467	
Basic Annual O&M		214		
Reallocation Study		350		
Service Bridge & Gate Repair		253		
Lake Texoma, TX & OK—Total Need	8,740	31,617	10,057	
Basic Annual O&M		7,000		
Shoreline Management Plan	1,158			

RED RIVER VALLEY ASSOCIATION FISCAL YEAR 2011 APPROPRIATIONS CIVIL WORKS—Continued

[In thousands of dollars]

	Fiscal Year 2010 Approp	RRVA Fiscal Year 2011 Request	President Fiscal Year 2011 Budget	Local Sponsor Requirements
Backlog Maintenance	24,617	
Chloride Control Project, TX & OK	1,481	2,025	1,439	
Old River Lock, LA (MR&T)	9,854	12,755	9,255	

NOTE.—Local Sponsor Column—Sponsor indicated in (); (?) indicates No Sponsor identified and need one to continue (L) indicates Sponsor not required now but need one for feasibility; N/A—No Sponsor required.

PREPARED STATEMENT OF THE MISSOURI RIVER ASSOCIATION OF STATES AND TRIBES

Dear Chairman Dorgan and Ranking Member Bennett: We are requesting your support for four items in the fiscal year 2011 budget for the U.S. Army Corps of Engineers (USACE), related to the Missouri River Basin. These include: (1) \$78.4 million to continue implementation of the Missouri River Recovery Program, (2) \$5.5 million to continue funding for the Missouri River Authorized Purposes Study, (3) \$10 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 and (4) inclusion of a provision in the fiscal year 2011 budget to allow reimbursement of travel expenses by tribal, State and non-governmental members of the Missouri River Recovery Implementation Committee to attend its meetings. No new funds are required for this action as the travel reimbursement can be paid with funds appropriated for the Missouri River Recovery Program, if the prohibition against reimbursement of travel in section 5018 WRDA 2007 is amended by a provision in the budget bill.

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 the USACE 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 the USACE to the tribes. The following paragraphs provide detailed information regarding the bases for our support of the four items referred to above for fiscal year 2011 budget of the USACE, as outlined below:

Funding for Missouri River Recovery Program.—\$119 million is needed for compliance with the Biological Opinion (BiOP). We strongly support the \$78.4 million in the President's budget as the minimum necessary for current year compliance with the BiOP. The Missouri River Recovery Program (MRRP) was established by the USACE 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 Biological Opinion, as amended in 2003. Compliance with the BiOP also protects economic uses as failure to comply with the Biological Opinion could require changes to reservoir operations and negatively impact other purposes.

The USACE, various tribal, State and Federal cooperating agencies and the Missouri River Recovery Implementation Committee (MRRIC) that includes various Stakeholders, are also 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. Work on this important tributary project is underway with fiscal year 2010 funding and is being implemented through a cooperative effort of the U.S. Bureau of Reclamation, USACE, U.S. Fish and Wildlife Service (USFWS) and the State of Montana.

In summary, funding the Missouri River Recovery Program at a minimum of \$78.4 million for fiscal year 2011 is essential to ensure compliance with the Biological Opinion 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.

Funding for the Missouri River Authorized Purposes Study (MRAPS).—We strongly support appropriation of \$ 5.5 million to continue funding for MRAPS in fiscal year 2011. 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 needed. The study was authorized for a total cost of \$25 million at full Federal expense.

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 and the USACE. 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 about 65 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 Projects and the basin since 1944. The USACE needs \$5.5 million for the study in fiscal year 2011. That amount 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, Congress can decide whether the law should be changed or not.

Funding to Protect Tribal Cultural Resources.—It is requested that Congress specifically appropriate \$10 million for fiscal year 2011 as a line item for the Omaha District, Northwestern Division, USACE 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 the USACE operation and maintenance budget has been woefully inadequate to address the ongoing damage to sites from operation of the Missouri River Mainstem Reservoir System.

The USACE has identified over 400 historic and cultural sites protected by Federal law that will be potentially damaged by the current annual operations 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. The USACE has a unique trust responsibility to the 28 Missouri River Basin tribes arising from the government-to-government relationship between the tribes and the United States Government, as well as an obligation under section 106 of the National Historic Preservation Act, applicable Executive orders, and other Federal laws, which require the USACE to either halt any Federal undertaking that will damage or destroy sites protected, or to mitigate the potential damage.

Funding for Travel and Participation in MRRIC and MRRP Activities.—We support inclusion of a provision in the fiscal year 2011 budget bill to remove the prohibition on Federal reimbursement of travel expenses for non-Federal members of the Missouri River Recovery Implementation Committee (MRRIC) to attend its meetings. No new funds are required for this action as it can be funded through the Missouri River Recovery Program (MRRP), but this action is needed to improve the functionality and chances for success of MRRIC.

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 Missouri River Ecosystem Restoration Plan (MRERP), which is a part of the MRRP. The failure to reimburse travel expenses is a hardship for some MRRIC members. It also hinders participation and prevents balanced representation by tribal, State and non-governmental members on the committee. Lack of travel reimbursement

also makes participation difficult 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.

The USACE 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 the USACE regarding recovery programs and the development MRERP.

We recognize that section 5018 could also be amended by the next WRDA bill to remove the prohibition on travel reimbursement for attendance at MRRIC meetings. However, that may take more time, while the need to fund travel reimbursement should begin as soon as possible so that all members can participate, receive the background materials, develop relationships and provide meaningful recommendations to the USACE and other agencies regarding Missouri River Recovery programs as may be appropriate through the MRRIC process.

In 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 the USACE 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 me know if you have questions.

PREPARED STATEMENT OF THE LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

On behalf of LADOTD, Office of Public Works and Intermodal Transportation, we present recommendations for fiscal year 2011 appropriations for U.S. Army Corps of Engineers Civil Works Projects in Louisiana.

Louisiana contains the terminus of the Mississippi River, third largest drainage basin in the world, draining 41 percent, or 1¼ million square miles, of the contiguous United States and parts of two Canadian provinces. Consequently, a comprehensive and extensive flood control system is required to ensure that these drainage flows are contained and safely passed to the gulf. Almost 3,000 miles of levees (1,500 in the MR&T system) constructed jointly by Federal, State and local entities allow Louisiana to be habitable year-round. Concentrated behind these levees are the vast majority of Louisiana's urban centers and petro-chemical complexes. Nearly 75 percent of the population lives and works in those same areas. Approximately 60 percent of the State's agricultural products are produced in these protected areas. Louisiana has the second largest refining capacity in the Nation, producing 15 billion gallons of gasoline annually at 19 refineries. Louisiana ranks second in produced natural gas and third for oil production. The pipeline system which supplies much of this Nation with natural gas and refined petroleum products originates in Louisiana. It is important to note that the petrochemical, oil and gas industries in Louisiana that contribute significantly to the economic well being of the entire Nation are almost totally dependent on this Federal constructed flood control system to protect their facilities.

It is equally important to note that this same river drainage system forms the backbone of the Federal constructed Inland Waterway System which provides the Nation's heartland cost effective access to the global marketplace via the 230 mile deepwater channel of the lower Mississippi River from Baton Rouge to the gulf. This strategic gateway to international markets is the largest port complex in the world. The Inland Waterway System—the whole system—allowed industrial facilities scattered throughout the central portion of the Nation to obtain raw materials and fuel from distant locations and to reach worldwide markets. These industries, and most of the agricultural industries in mid-America, are heavily dependent on the Federal maintained navigable waterways to remain globally competitive in transporting their products. Unfortunately, the administration's budget proposals in recent years indicate a lack of concern for the preservation and efficient operation of this system which is rapidly deteriorating due to lack of maintenance and is in desperate need of renovation and modernization.

The Mississippi River and Tributaries Project (MR&T), which encompass both flood control and navigation features, has been underway since 1928 and isn't sched-

uled for completion until beyond 2031. We strongly support the Mississippi Valley Flood Control Association’s request for the MR&T Project and urge your support of this level of funding.

SUMMARY OF RECOMMENDED APPROPRIATIONS FISCAL YEAR 2011 FOR LOUISIANA FLOOD CONTROL, NAVIGATION, HURRICANE PROTECTION & WATER RESOURCES PROJECTS

LOUISIANA PROJECTS	LOUISIANA REQUEST
GENERAL INVESTIGATIONS STUDIES	
Amite River-Ecosystem Restoration, LA	\$500,000
Calcasieu Lock, LA	2,000,000
Red River (IBJWW) Recon Study	100,000
Southwest Coastal LA Hurricane Protection, LA	1,500,000
St. Charles Parish Urban Flood Control, LA	445,000
West Shore—Lake Pontchartrain, LA	500,000
Bossier Parish Levee & FC	250,000
Cross Lake Water Supply	50,000
Ouachita River and Tribs	200,000
Ouachita and Black	100,000
PED	
Bayou Sorrel Lock, LA	2,239,000
Calcasieu River Basin, LA	250,000
Calcasieu River & Pass Navigation, LA	1,000,000
Port of Iberia, LA	1,000,000
NEW STUDIES	
South Central LA Coastal Protection	100,000
Port Fourchon Enlargement, LA	100,000
Cameron Loop, Calcasieu Pass	100,000
East Fork, Calcasieu Pass	100,000
University Lakes	200,000
Bayou Rigaud Ext. Dredging & Breakwater Prot.	100,000
Chenier Caminada Levee Ext. & Levee Armoring Grand Isle, LA	100,000
Laurel Ridge Levee Ext., Ascension Parish	100,000
CAP	
Kenner Environmental Infrastructure	500,000
Lafourche Parish Environmental Infrastructure	500,000
Plaquemines Parish Environmental Infrastructure	500,000
St. Bernard Environmental Infrastructure	500,000
St. Charles Environmental Infrastructure	500,000
St. James Environmental Infrastructure	500,000
St. John the Baptist Environmental Infrastructure	500,000
St. Tammany Environmental Infrastructure	500,000
West Baton Rouge Environmental Infrastructure	500,000
CONSTRUCTION GENERAL	
Comite River, LA	25,000,000
East Baton Rouge Parish, LA	25,000,000
Larose to Golden Meadow	5,500,000
IHNC Lock	13,000,000
Red River Below Den Dam (AR, LA)	12,000,000
Ouachita River Levees	2,600,000
J Bennett Johnston WW, Miss. R. to Shreveport	20,000,000
Calcasieu River & Pass, Dredged Material Management Program	12,000,000
Southeast Louisiana	21,200,000
Violet Freshwater Diversion	5,500,000
West Bank & Vicinity, LA	5,000,000
Ascension Parish Environmental Infrastructure	2,000,000
East Baton Rouge Environmental Infrastructure	2,000,000
Livingston Parish Environmental Infrastructure	2,000,000
OPERATIONS & MAINTENANCE GENERAL	
Atchafalaya River, Bayous Chene, Boeuf & Black	36,700,000

SUMMARY OF RECOMMENDED APPROPRIATIONS FISCAL YEAR 2011 FOR LOUISIANA FLOOD
CONTROL, NAVIGATION, HURRICANE PROTECTION & WATER RESOURCES PROJECTS—Continued

LOUISIANA PROJECTS	LOUISIANA REQUEST
Barataria Bay Waterway	135,000
Bayou Lafourche	4,300,000
Bayou Segnette	37,000
Bayou Teche	8,900,000
Bayou Teche & Vermilion	650,000
Calcasieu River & Pass	57,233,000
Freshwater Bayou	14,875,000
Gulf Intracoastal Waterway	41,000,000
Houma Navigation Canal	7,100,000
Mermentau River	11,410,000
Mississippi River, Baton Rouge to the Gulf	170,169,000
Mississippi River Gulf Outlet at Venice	8,338,000
Waterway Empire to the Gulf	47,000
WW. IWW to Bayou Dulac	30,000
Ouachita & Black Rivers (AR, LA)	24,135,000
Bayou Bodcau	6,922,000
Caddo Lake	347,000
Wallace Lake	886,000
Bayou Pierre	49,000
J Bennett Johnston Waterway	23,864,000
Lake Providence Harbor	1,200,000
Madison Parish Port	150,000
Inspection of Completed Works (N.O.)	1,161,000
Inspection of Completed Works (V)	1,000,000

SUMMARY OF RECOMMENDED APPROPRIATIONS FISCAL YEAR 2010 FOR LOUISIANA MISSISSIPPI
RIVER AND TRIBUTARIES

LOUISIANA PROJECTS	LOUISIANA REQUEST
FC, MR&T GENERAL INVESTIGATIONS	
Alexandria to the Gulf (PED)	\$1,200,000
Donaldsonville to the Gulf	500,000
Houma Navigation Canal Deepening (PED)	3,000,000
Morganza to the Gulf (PED)	50,000
Spring Bayou Area, LA	50,000
FC, MR&T CONSTRUCTION	
Atchafalaya Basin	25,000,000
Atchafalaya Basin Floodway System	2,631,000
Channel Improvement (N.O. Dist.)	11,861,000
Mississippi Delta Region	15,338,000
Mississippi River Levees, LA (N.O. Dist.)	30,000,000
Mississippi River Levees (LA) (V. Dist.)	27,930,000
FC, MR&T MAINTENANCE	
Atchafalaya Basin	39,900,000
Atchafalaya Basin Floodway System	1,878,000
Baton Rouge Harbor (Devil's Swamp)	42,000
Bayou Cocardie and Tributaries	47,000
Bonnet Carre Spillway	5,300,000
Channel Improvement (N.O. Dist.)	14,128,000
Dredging (N.O. Dist.)	700,000
MS Delta Region	1,921,000
Old River	12,755,000
Mississippi River Levees (LA) (N.O. Dist.)	6,500,000
Mississippi River Levees (LA) (V. Dist.)	4,400,000
Revetments & Dikes (LA) (V. Dist.)	21,052,000

SUMMARY OF RECOMMENDED APPROPRIATIONS FISCAL YEAR 2010 FOR LOUISIANA MISSISSIPPI RIVER AND TRIBUTARIES—Continued

LOUISIANA PROJECTS	LOUISIANA REQUEST
Dredging (LA) (V. Dist.)	5,023,000
Boeuf & Tensas Rivers	3,244,000
Red River Backwater	9,496,000
Lower Red River	498,000
Inspection of Completed Works (V)	681,000
Inspection of Completed Works (N.O.)	940,000

PREPARED STATEMENT OF THE MISSISSIPPI VALLEY FLOOD CONTROL ASSOCIATION

The Mississippi Valley Flood Control Association respectfully requests that the sum of \$550 million be appropriated in fiscal year 2011 for the Mississippi River and Tributaries Project.

In view of the fact that there are some new members of the subcommittee, it seems appropriate to very briefly explain a little of the history of the Flood Control Association that 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 group 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 United States Government. This group of dedicated citizens was without luck until the record flood of 1927 swept through the Mississippi River Valley with the fury of devastation not seen before. An unknown number of people perished along with thousands of heads of livestock and all manner and large numbers of wildlife. Some 7 percent of all the productive land on this planet was under water for a period of almost half a year. The Congress, after extensive hearings, passed the Flood Control Act of May 15, 1928 that was signed into law by then President Calvin Coolidge.

The Flood Control Association, acting under the erroneous assumption that the United States Government would provide all that was needed to prevent flooding in the valley, disbanded. In 1935 it became apparent that additional legislation was required and the association, under the leadership of then Senator John Overton from Louisiana, was re-organized and has been in continuous and active existence since. This is our 75th year to hold a meeting in Washington, to request funds for the Mississippi River and Tributaries Project.

We have been fortunate since 1935 to have as our President and two Vice Presidents, Members of the United States Congress with Congressman Ed Whitfield from the Commonwealth of Kentucky serving as our president and Congressmen Mike Ross from Arkansas and Phil Hare from Illinois serving as our vice presidents.

We appear before you today after having carefully considered the President's fiscal year 2011 budget for the Mississippi River and Tributaries Project. We find, as usual, that the executive department has sadly un-funded the Corps of Engineers civil works budget for the up-coming fiscal year. We also note that the Corps has stated that they have a capability under the Mississippi River and Tributaries Project to use \$550 million in fiscal year 2011. We would respectfully request that the Congress appropriate the amount of \$550 million for the Mississippi River and Tributaries Project.

This Nation is still faced with a war on terror and the economic situation is poor to say the least. We are ever mindful of these facts but we feel that we are justified in requesting additional appropriations for the Mississippi River and Tributaries Project because the assets and resources of this great Nation must not be neglected at this time. We are unaware of any other appropriation that contributes as much to national wealth and resources as does flood control and navigation for the major rivers of this country and that is certainly true for the mightiest of them all, the Mississippi, the third largest watershed on the planet.

Millions of acres of what were once overflow lands are now highly productive and contributes to our national wealth. These lands by reason of their geographic location are the most fertile of the Nation and ample water is available so that they can produce an abundance of food and fiber for the general welfare and prosperity of the country. This is only possible because of the coordinated work performed by the triad of the United States Corps of Engineers, the United States Congress and

the local people. The appropriations made by the Congress for the Mississippi River and Tributaries Project are investments in this Nation's future.

We are aware of the ever increasing demand on the Federal dollars and the many complex problems that the Congress is confronted with, but we believe that this project is economically sound, environmentally necessary, and we urge its completion with all deliberate haste. Our request of \$550 million is required to meet this goal.

The ultimate goal to be accomplished with the passage of the act of 1928 was that the lower valley would never again be destroyed by a flood such as that of the fateful year of 1927. By law, the Mississippi River and Tributaries Project provides protection against the "greatest possible flood" even though not yet completed. For over 80 years the project has worked to perfection with not one acre flooded that was designed not to be flooded. The project has also insured the permanency of location for harbor facilities and industrial sites and to obtain a more reliable navigation channel. With the help of the Congress we have made great strides in the Mississippi River Valley but the job is not yet completed. All the people of the valley will not feel or be safe until the job is completed.

PREPARED STATEMENT OF THE NATURE CONSERVANCY

Mr. Chairman and members of the subcommittee, thank you for the opportunity to present The Nature Conservancy's recommendations for fiscal year 2011 appropriations for the U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation.

Our recommendations represent a priority set of efforts that are both individually important and collectively designed to demonstrate innovations in restoration to help guide future resource allocation. If done well, ecosystem restoration projects pay dividends through services such as provision of more reliable and higher quality water, natural flood attenuation, sustaining commercial fisheries, and supporting economically-important outdoor recreation. Moreover, the Nation's resiliency to climate change will be substantially dictated by the health of our ecosystems. We believe the public investments we are requesting now will pay dividends for decades to come.

CORPS CONSTRUCTION PRIORITIES

Continuing Authorities Program.—We thank the subcommittee for continuing its strong support of the section 1135: Project Modifications for Improvement of the Environment and section 206: Aquatic Ecosystem Restoration programs. However, demand for these programs continues to outstrip funding. The Nature Conservancy (the Conservancy) requests that the programs be fully funded by appropriating \$40 million for section 1135 and \$50 million for section 206.

The Conservancy seeks funding for two projects under the Continuing Authorities Program in fiscal year 2011: Spunky Bottoms (sec. 1135), and Emiquon East (sec. 206). Both are model projects to restore floodplain wetlands by reconnecting them to the Illinois River. Each project needs funding to complete its respective feasibility study, develop a project partnership agreement, and begin designs for the next phase. The Conservancy is the non-Federal cost share partner for both projects, and we request \$500,000 for the Spunky Bottoms project and \$185,000 for the Emiquon East project. Additional funds will be necessary for the planning, specification, construction and monitoring phases.

We continue to be concerned about the subcommittee's guidance for these programs. The prioritization requirements and "no new starts" rule included in the fiscal year 2009 report and renewed in fiscal year 2010 block the implementation of important conservation priorities that enjoy strong support from their local communities. We urge the subcommittee to adopt a more flexible approach. Appropriating the requested amounts will help address the backlog in these programs.

Upper Mississippi River Navigation and Ecosystem Sustainability Program.—The Navigation and Ecosystem Sustainability Program (NESP) is a dual purpose authority for integrated management of the Upper Mississippi River (UMR) system's habitat and navigation facilities. All activities implemented under the existing Environmental Management Program (EMP) can be transitioned into NESP, but it is critical to fund both programs until the transition is complete. In recognition of the current budgetary constraints, we request a NESP fiscal year 2011 new start of \$15 million. The Conservancy also supports \$25 million for EMP in fiscal year 2011.

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 EMP and NESP, but is unique in its basin-wide approach

to restoration. The Conservancy supports \$7.9 million in Construction funding and \$1 million in Investigation funding for this program in fiscal year 2011.

Aquatic Nuisance Species Dispersal Barrier.—The Conservancy supports funding for the construction and maintenance of the Dispersal Barriers on the Chicago Sanitary and Ship Canal (CSSC) at no less than \$12,650,000 in fiscal year 2011. Additionally, we request at least \$1 million in fiscal year 2011 to conduct an expedited feasibility study of the comprehensive set of permanent solutions to prevent the movement of all invasive species through the CSSC. We note that the Corps has the capacity to effectively expend up to \$23,650,000 on construction and \$2,500,000 on the separation study, and we encourage the subcommittee to consider this greater investment to address this urgent problem.

Missouri River Fish and Wildlife Recovery Program (MRRP).—Under this program, the Corps 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 allows expenditures in the upper basin States as well. 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 \$119 million for the MRRP in fiscal year 2011, including \$20 million to continue progress on the design and construction of fish passage and screens at Intake Dam.

Cartersville Diversion Dam Fish Passage.—This project would construct a fish passage at Cartersville Dam, allowing fish, including the Federal listed endangered pallid sturgeon, to reach the upstream portions of the Yellowstone River. This project, along with its companion project at Intake Dam, would open an additional 296 miles of habitat, which is critically needed for successful recovery of the sturgeon population. The Conservancy supports \$300,000 for this project in fiscal year 2011.

South Florida Ecosystem Restoration Program.—Corps 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. WRDA 2007 authorized construction of the first projects under the Comprehensive Everglades Restoration Plan (CERP), and we support funding for the Indian River Lagoon South, Picayune Strand, and the Site 1 Impoundment. We place priority on funding the Kissimmee River Restoration Project, which is almost 75 percent complete and already a success story. The Conservancy requests \$246 million for the South Florida Ecosystem Restoration program in fiscal year 2011.

Hamilton City Flood Damage Reduction and Ecosystem Restoration.—This project will increase flood protection for Hamilton City, CA and surrounding agricultural lands and restore approximately 1,500 acres of riparian habitat. The PED phase for this project was completed in 2009, the non-Federal sponsor is in place and the project received construction authorization in WRDA 2007. The Conservancy supports \$15 million in fiscal year 2011 to complete the first phase of construction.

Chesapeake Bay Oyster Recovery.—Native 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 oyster populations toward sustainable levels. The requested appropriation will create more than 60 acres of oyster habitat. The Conservancy supports \$6 million in fiscal year 2011.

SUSTAINABLE RIVERS PROJECT

The Sustainable Rivers Project (SRP) is an initiative launched by the Corps in partnership with the Conservancy that recognizes the urgent need to update decades-old water management practices to meet society's needs today and in the coming decades. Currently working in eight demonstration river basins, the SRP is developing and demonstrating innovative approaches to reservoir operations that restore critical ecosystems and valuable ecosystem services, while continuing to provide for (and often improving) water supply and flood risk management. The Conservancy supports funding for several initiatives that will support the SRP:

Global Change Sustainability.—Evolving and accumulating challenges to water management, such as expanding water and energy demands, shifting economic and land use patterns and environmental degradation, require innovation in our water management practices. This project will allow the Corps to advance a variety of new practices through several initiatives, including the SRP, working with other Federal agencies to develop a national strategy for climate change adaptation, updating drought contingency plans, and others. The Conservancy supports \$10 million in fiscal year 2011 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 tech-

niques and improve upon them. A national database will incorporate data from water supply surveys, climate studies, drought contingency plans, and other sources, helping the Corps assess its past practices and make project- and basin-scale predictions for the future. The SRP will be part of this effort, developing new methods that can be used at Corps dams nationwide. The Conservancy supports \$1 million in fiscal year 2011 for this program.

Willamette River Floodplain Restoration Study.—The Corps and the Conservancy are working together to identify ecological flow requirements downstream of Corps dams, and to incorporate those flows into dam operations. The ultimate goal of this study is to enable system-wide changes in dam operation and floodplain management that improve fish and wildlife habitat and community flood protection. The Conservancy supports \$153,000 in fiscal year 2011 to continue this study.

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 basin is a priority landscape for the Conservancy due to its high quality tributary systems, unique natural communities and multitude of ESA-listed species. The study identifies dam management modifications for environmental benefits while maintaining beneficial human uses. We support \$750,000 in fiscal year 2011 for this project.

White River Basin-wide Comprehensive Study.—The ecology of the White River Basin is impacted by Federal impoundments, water withdrawals for agriculture, power generation, and modifications for navigation. This project will help determine the condition of the basin and its future ecological and human needs. The Conservancy supports \$1,500,000 in fiscal year 2011 for this study.

Big Cypress Basin Watershed Study.—This study, part of a project to restore the natural river flow of Big Cypress Bayou to enhance aquatic ecosystem health and the globally significant Caddo Lake wetlands, would allow the Corps to evaluate the potential ecosystem restoration benefits and impacts of flow recommendations developed with the Conservancy. It would also develop sediment and nutrient load guidelines and consider modifying the Caddo Lake weir to allow manipulation of lake levels for bald cypress regeneration and aquatic plant control. We support \$175,000 in fiscal year 2011 for this study.

OTHER CORPS INVESTIGATION PRIORITIES

Puget Sound Nearshore Ecosystem Restoration Project.—The recovery of Puget Sound is a top priority for Washington State and the Corps' Puget Sound Nearshore Ecosystem Restoration Project (PSNERP) comprises one of the most important pieces of the Governor's recovery plan. The Conservancy requests \$1.5 million in fiscal year 2011 (in the Investigations account) to advance this critical project. The Conservancy also requests \$7 million (in the Construction account) in fiscal year 2011 for the Puget Sound and Adjacent Waters Program—a program that provides funding for early action projects to restore Puget Sound.

Long Island Sound Oyster Restoration.—This project will develop a comprehensive Master Plan for the restoration of oysters and other shellfish in Long Island Sound, supporting both ecological and economic well-being by providing a sustainable oyster fishery and creating habitat for other coastal and marine species. The Conservancy supports \$250,000 in fiscal year 2011 for this important effort.

Lower Mississippi River Resource Assessment.—Flood control and drainage systems have accelerated erosion and habitat loss along the 954-mile Lower Mississippi River and its tributaries. Working with the U.S. Department of Interior, the Corps will evaluate the state of river management, habitat and public access along the Lower Mississippi and recommend action to address current and future needs. The Conservancy supports \$200,000 in fiscal year 2011 for this project.

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 allow the Corps to consider removing them or repurposing the structures to accommodate environmental and recreational needs. The Conservancy supports \$100,000 in fiscal year 2011 for the Reconnaissance study.

Thames River Basin Watershed Study.—The Thames River Basin ecosystem depends on naturally variable water flow, good water quality and suitable habitat. This study will determine which research and measures are necessary to improve the management of water control structures in the basin. We support \$100,000 in fiscal year 2011 to complete the reconnaissance phase.

Middle Potomac River Watershed Comprehensive Study.—This study will develop a comprehensive, multi-jurisdictional sustainable management plan for the Middle Potomac watershed, balancing the ecological functions and services provided by the

river with the human demands upon it. To help complete the watershed assessment, we support \$68,000 in fiscal year 2011.

Yellowstone River Corridor Comprehensive Study.—Funding this ongoing study of economics, 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 economic uses of its waters. The Conservancy supports \$750,000 for fiscal year 2011.

Susquehanna River Basin Low Flow Management and Environmental Restoration.—Drought conditions, combined with current and projected demands for water use, have the potential to impact natural ecosystems in the Susquehanna River basin and the upper Chesapeake Bay. This basin-wide study will investigate low flow conditions and establish goals and standards for low flow management. The Conservancy supports \$400,000 in fiscal year 2011 for this project.

CORPS EXPENSES

Mid-Atlantic River Basin Commissions.—The Delaware, Potomac, and Susquehanna River Basin Commissions are essential to advancing and coordinating the water management and conservation interests of the Federal Government, the affected States, and the Conservancy. Funding was restored in fiscal year 2009, but it was not continued in fiscal year 2010. The Conservancy requests that the Federal Government continue support of the Commissions' work by appropriating \$2,365,000 in fiscal year 2011.

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 in the Colorado River system while allowing water use to continue in the arid West. A full appropriation will fund work on remaining major capital projects. The Conservancy supports \$8,354,000 in fiscal year 2011 for these Programs.

Platte River Recovery Implementation Program.—An agreement between the Governors of Wyoming, Nebraska and Colorado and the Secretary of Interior sets forth a plan to restore habitat for five endangered or threatened species in the Platte River basin. The Conservancy supports \$12,707,000 for this recovery effort in fiscal year 2011.

Basin Studies and WaterSMART.—Basin Studies are a component of the new WaterSMART program that helps the Bureau of Reclamation address the threat of climate change across our Nation's western waters. The Basin Study being conducted on the Colorado River will assess and work to resolve water supply and demand issues that may be exacerbated by climate change, while considering impacts on the basin's ecological resiliency. The WaterSMART program can complement that study by delivering grants to local stakeholders developing mechanisms to improve both water supply imbalances and environmental flows. The Conservancy supports a \$62 million appropriation to the Bureau of Reclamation for the WaterSMART program in fiscal year 2011, including \$6 million for its Basin Studies.

Thank you for the opportunity to present our comments on the Energy and Water Appropriations bill.

PREPARED STATEMENT OF THE VENTURA PORT DISTRICT OF CALIFORNIA

Mr. Chairman: Thank you for the opportunity to present testimony on behalf of the Ventura Port District of California. My name is Richard W. Parsons. I am the Dredging Program Manager of the Port. The President's fiscal year 2011 request within the operations, maintenance and dredging component of the civil works budget for the U.S. Army Corps of Engineers is \$2,840,000 for the annual dredging of Ventura Harbor. Informal communications with the Corps indicate that \$4,300,000 will be required to meet dredging needs of the port between October 1, 2010 and September 30, 2011. This higher amount is consistent with the dredging requirements of the past several years. Accordingly, it is respectfully requested that the Congress appropriate an additional \$1,460,000 beyond the President's request to meet anticipated Corps of Engineer requirements. It is worthy of note that employment associated with the commercial fishing industry in the Port of Ventura area is directly related to the dredging activities of the Corps. An estimated 71 million pounds of seafood were unloaded at the facilities associated with the Port of Ventura which provides significant employment in the area. Thank you very much for your favorable consideration of this request.

PREPARED STATEMENT OF THE CITY OF SANTA BARBARA, CALIFORNIA

OPERATIONS AND MAINTENANCE DREDGING—FUNDING REQUEST

As your distinguished subcommittee writes the fiscal year 2011 Energy and Water Resources Appropriations bill, I would like to bring a very important Corps of Engineers' project to your attention. The city of Santa Barbara requests \$3,700,000 from the Army Corps of Engineers' (ACOE) Operation and Maintenance (O&M) Account in fiscal year 2011 Energy and Water Development Appropriations bill for essential annual maintenance dredging of Santa Barbara Harbor's Federal Navigational Channel.

PROJECT JUSTIFICATION

In 1970 Congress authorized (Public Law 91-611, sec. 114) full funding for ACOE maintenance dredging for the Harbor's Federal Channel to reduce storm damage, shoaling and navigational hazards. Today more than ever, the Harbor continues to serve and support our National interests. The Harbor is home port for the 87 foot U.S. Coast Guard Cutter *Blackfin* and NOAA R/V *Shearwater* serving Channel Islands National Marine Sanctuary (CINMS). *Blackfin's* harbor location is crucial to its mission of patrolling waters all the way to Morro Bay (100 miles north) and is critical to ocean safety and rescue, together with emerging Homeland Security Defense System (USCG) requirements along the California coastline. Santa Barbara Harbor also provides a staging area, facilities and resources required for oil spill prevention and response, and is a designated harbor of safe refuge.

Santa Barbara Harbor was constructed in the late 1920's providing the closest harbor of refuge to the notoriously dangerous waters off Pt. Conception. Various improvements over the years have created an all-weather harbor with 1,133 slips for vessels ranging from 20 feet to 150 feet in length serving hundreds of thousands of people annually. The Harbor serves as a key economic engine for the city. In addition, the Harbor both directly and indirectly creates several thousand jobs, which are vital to the local economy, commercial fishing, businesses and maritime industry.

Santa Barbara Harbor impedes the transport of sand downcoast resulting in shoaling of the Federal Channel and potential coastal erosion at several nearby coastal communities. The Corps of Engineers conducted comprehensive studies of the harbor in the 1950's and determined that annual dredging of the harbor was necessary to maintain navigability and nourish downcoast beaches preventing erosion. It is essential to dredge approximately 250,000 cubic meters (c.m.) of sand from the Federal Channel every year to maintain access for the commercial fishing fleet (annual catch is valued at \$25 million), U.S. Coast Guard Cutter *Blackfin*, NOAA R/V *Shearwater* serving Channel Islands National Marine Sanctuary as well as thousands of recreational vessels.

Annual dredging costs of the Federal Channel have recently been as low as \$1,650,000 for minimal critical maintenance dredging and can cost over \$3 million depending on winter storms and sand accumulation. Army Corps of Engineers (Corps) contracts with a private dredge company to undertake annual dredging between October and March of the fiscal year.

A recap of the last several years demonstrates the continuing trend of reduced dredge funding, which could impact Harbor operations and eventually accumulated sand could close the channel during winter storms.

Fiscal Year 2008: Conference.—\$1,940,000

Fiscal Year 2009: Omnibus Bill.—\$1,940,000

Fiscal Year 2010: Conference Report.—\$1,606,000

FUNDING REQUEST

The President's fiscal year 2011 budget recommendation includes \$2,040,000 for operations and maintenance dredging for Santa Barbara Harbor. I respectfully request that the U.S. Senate, through your subcommittee, support that level of funding contained in the President's budget submittal for dredging of the Harbor. In addition, the city of Santa Barbara is requesting that the subcommittee recommend an additional, \$1.7 million for maintenance dredging for fiscal year 2011 (Total \$3.7 million).

Dredging costs per cubic yards removed, have increased dramatically in recent years. Due to these escalating costs, the Corp of Engineers has increased the project costs to \$3.7 million for maintaining the Federal Channel in Santa Barbara Harbor.

We respectfully request your support for this requirement to maintain the Federal Channel and thank you for the opportunity to submit this statement.

DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

PREPARED STATEMENT OF THE PERKINS COUNTY RURAL WATER SYSTEM, INC.

Perkins County Rural Water System, Inc. respectfully submits this written testimony to the Appropriations Subcommittee on Energy and Water Development for appropriations of \$3.142 million for fiscal year 2011. This project was authorized under Public Law 106-136.

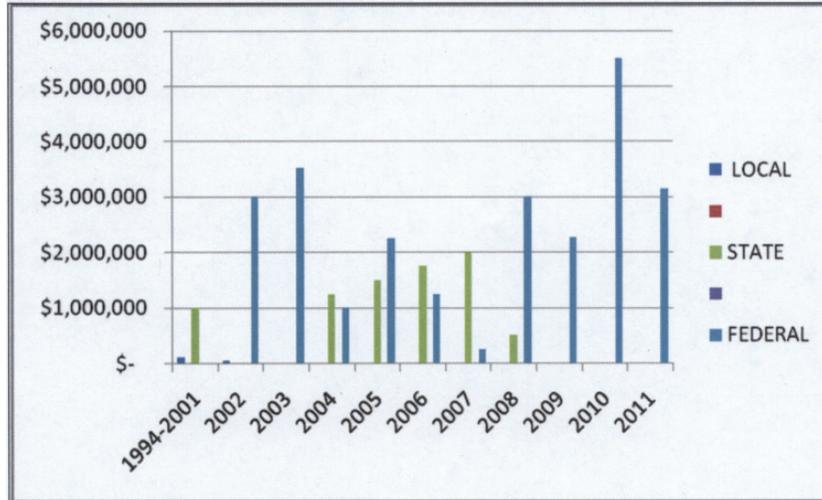
Perkins County Rural Water System, Inc. (PCRWS) gained the approval of the Office of Management and Budget and the Bureau of Reclamation to proceed with construction in 2004. With funding for 2010, we have been appropriated to date \$16.9 million. In 2009 and 2010, we received \$2.65 million and \$1.0 million respectively. Three million dollars is basically the lowest amount that we could receive and still do enough construction to move our project forward. Cost share for the System is 75 percent Federal, 25 percent State and local funds. The State of South Dakota has legislated to loan PCRWS the local share for 40 years at 3 percent interest to keep costs down to the consumer. We have used all of our State of South Dakota funds. With local and State funds to date, we would now be able to cost share up to \$36.4 million. Total project funds are projected at \$32.0 million to finish with \$24 million of that amount to be Federal funds.

BREAKDOWN FOR THE PROJECT FOR 2011 IS AS FOLLOWS

2010 BUDGET:	
INCOME:	
BUREAU OF RECLAMATION	\$3,142,000
STATE OF SOUTH DAKOTA
LOCAL FUNDS	25,000
TOTAL	3,167,000
EXPENSE:	
NORTH DAKOTA STATE WATER COMMISSION	886,760
FINISH CONSTRUCTION ON DISTRIBUTION	2,280,240
TOTAL	\$3,167,000

PCRWS would need \$3.167 million for the next year to complete the project by 2011. This consists of 250 miles of various pipe sizes ranging from 1.5 inch to 8 inch, booster stations, and a pump station capable of moving 800 gallons of water per minute, two or more storage tanks and telemetry to operate the whole system from one localized location.

The chart below shows the amount of Federal funds in comparison to State and local funds. The amount of State and local funds has exceeded the cost share for both. Therefore, all funds except for approximately \$25,000 per year will have to be Federal funds.



The quality of water in northwest South Dakota is the main concern for the health and well being of the people. Although the water typically meets primary standards established by the USEPA, most of the dissolved solids are exceedingly high by the State of South Dakota standards. Water quality and quantity in Perkins County, South Dakota has been a plague for the county over many years.

Droughts, such as the one Perkins County is in now, are a fact of life for the people in this area. With surface water gone and wells being depleted, farmers and ranchers are desperately trying to hold onto their livestock herds. Rains will raise grass and small crops, but water for drinking is a constant problem for all.

On behalf of the Board of Directors of PCRWS and the people of Perkins County, South Dakota, thank you for allowing us to enter this testimony in the subcommittees report.

PREPARED STATEMENT OF THE COLORADO RIVER BASIN SALINITY CONTROL FORUM

BUREAU OF RECLAMATION—FISCAL YEAR 2011 APPROPRIATION

Colorado River Basin Salinity Control Forum's Recommendation:	
Title II Program (Basinwide Program) Authorized in 1995 (Public Law 104-20)	\$17,500,000
Colorado River Water Quality Improvement Program	(1)
Paradox Valley Unit and Grand Valley Unit	(1)

¹ Administration request.

This testimony is in support of funding for the title II Colorado River Basin Salinity Control Program. The Congress has designated the Department of the Interior, Bureau of Reclamation (Reclamation), to be the lead agency for salinity control in the Colorado River Basin. This role and the authorized program were refined and confirmed by the Congress when Public Law 104-20 was enacted. A total of \$17,500,000 is requested for fiscal year 2011 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. Reclamation 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 Reclamation has a backlog of proposals. Reclamation continues to select the best and most cost-effective proposals. Funds are available for the Colorado River Basin States' cost sharing for the level of Federal funding requested by the Forum. Water quality improvements accomplished under title II of the Colorado River Basin Salinity Control Act also benefit the quality of water delivered to Mexico. Although the United States has always met the commitments of the International Boundary & Water Commission's (Commission) Minute No. 242 to Mexico with respect to water quality, the United States Section of the Commission is currently addressing Mexico's request for better water quality at the International Boundary.

Some of the most cost-effective salinity control opportunities occur when Reclamation can improve irrigation delivery systems at the same time that the U.S. Department of Agriculture's (USDA) program is working with landowners (irrigators) to improve the on-farm irrigation systems. Through the USDA Environmental Quality Incentives Program, adequate on-farm funds appear to be available and adequate Reclamation funds are needed to maximize the effectiveness of the effort. These salinity control efforts have secondary water conservation benefits at the point of use and downstream at 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. Reclamation has received cost-effective proposals to move the program ahead and the Basin States have funds available to cost-share up-front.

The Colorado River Basin Salinity Control Program was originally authorized by the Congress in 1974. The title I portion of the Colorado River Basin Salinity Control Act responded to commitments that the United States made, through Minute No. 242, to Mexico concerning the quality of water being delivered to Mexico below Imperial Dam. Title II of the Act established a program to respond to salinity control needs of Colorado River water users in the United States and to comply with the mandates of the then newly legislated Clean Water Act. Initially, the Secretary of the Interior and Reclamation were given the lead Federal role by the Congress. This testimony is in support of adequate funding for the title II program.

After a decade of investigative and implementation efforts, the Basin States concluded that the Salinity Control Act needed to be amended. The Congress revised the act in 1984. That revision, while leaving implementation of the salinity control policy with the Secretary of the Interior, also gave new salinity control responsibilities to the USDA and to the Bureau of Land Management (BLM). The Congress has charged the administration with implementing the most cost-effective program practicable (measured in dollars per ton of salt removed). The Basin States are strongly supportive of that concept as the Basin States cost share is 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 \$17.5 million requested by the Forum on behalf of the seven Colorado River Basin States is the level of funding necessary to proceed with Reclamation's portion of the Plan of Implementation. In July 1995, the Congress amended the Colorado River Basin Salinity Control Act. The amended act gives Reclamation new latitude and flexibility in seeking the most cost-effective salinity control opportunities, and it provides for utilization of proposals from project proponents, as well as more involvement from the private as well as the public sector. The result is that salt loading is being prevented at costs often less than 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. 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 COMMISSION OF NEVADA

Dear Chairman Dorgan: As a Nevada representative of the Colorado River Basin Salinity Control Forum, the Colorado River Commission of Nevada (CRCN) submits this written testimony in support of \$17.5 million for funding the fiscal year 2011 budget for the Bureau of Reclamation's Colorado River Basin Salinity Control Program. The CRCN urges the Congress to appropriate funds requested by the administration to continue to maintain and operate salinity control facilities as they are completed and placed into long-term operations. Reclamation has completed the Paradox Valley Unit which involves the collection of brines in the Paradox Valley of Colorado and the injection of those brines into a deep aquifer through an injection well. The continued operation of this project and the Grand Valley Unit will be funded primarily through the Facility Operations activity. The CRCN also supports funding to allow for continued general investigation of the Salinity Control Program

as requested by the administration for the Colorado River Water Quality Improvement Program.

Salinity remains one of the major problems in the Colorado River. Congress has recognized the need to confront this problem with its passage of Public Law 93-320 and Public Law 98-569. Your support of the Forum's current funding recommendations in support of the Colorado River Basin Salinity Control Program is essential to move the program forward so that the congressionally directed salinity objectives embodied in Public Law 93-320 and Public Law 98-569 are achieved.

PREPARED STATEMENT OF THE GRAND VALLEY WATER USERS ASSOCIATION

Dear Chairman Dorgan and Senator Bennett: We are requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act.

I appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE TRI-COUNTY WATER CONSERVANCY DISTRICT

Dear Chairman Dorgan and Senator Bennett: The Tri-County Water Conservancy District Board respectfully requests your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act.

We appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE WYOMING WATER ASSOCIATION

Dear Chairman Dorgan and Senator Bennett: We are requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives

are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act.

I appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE NATURE CONSERVANCY AND WESTERN RESOURCES
ADVOCATES

Dear Chairman Dorgan and Senator Bennett: We are requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act.

We appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF PNM RESOURCES, INC.

Dear Chairman Dorgan and Senator Bennett: We are requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act.

I appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARES STATEMENT OF THE ORCHARD MESA IRRIGATION DISTRICT

Dear Chairman Dorgan and Senator Bennett: We are requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act.

I appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE STATE OF WYOMING

Dear Chairman Dorgan and Senator Bennett: I am Requesting your support for the appropriation of \$8,354,000 to the Bureau of Reclamation included in the Presidents fiscal year 2011 recommended budget in the Upper Colorado Region budget line-item entitled "Endangered Species Recovery Implementation Program." This budget line-item designates \$800,000 for construction and construction management activities for the San Juan River Basin Recovery Implementation Program; \$7,154,000 for construction and construction management activities for the Upper Colorado River Endangered Fish Recovery Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy.

The Upper Colorado and San Juan recovery programs are highly successful collaborative conservation partnerships working to recover the four species of endemic Colorado River fish on the Federal endangered species list; while at the same time water use and development has been able to continue in our growing western communities. These programs are unique efforts involving the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. They are achieving Endangered Species Act (ESA) compliance for water projects and fully complying with interstate river compacts and the participating States' water law.

Since 1988, the two programs, collectively, have provided ESA section 7 compliance (without litigation) for over 1,850 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 embodied in both programs.

As we do each year in support of these two region-wide cooperative recovery programs, the State of Wyoming again requests the subcommittee's assistance: it is absolutely essential that fiscal year 2011 funding be provided within the Bureau of Reclamation's budget appropriation to assure that agency's continued financial participation as directed by Public Law 106-392, as amended.

The State of Wyoming thanks you for the past support and assistance of your subcommittee; it has greatly facilitated the ongoing and continued success of these multi-state, multi-agency programs.

PREPARED STATEMENT OF THE STATE OF COLORADO

Dear Chairman Dorgan and Senator Bennett: I am Requesting your support for the appropriation of \$8,354,000 to the Bureau of Reclamation included in the Presidents fiscal year 2011 recommended budget in the Upper Colorado Region budget line-item entitled "Endangered Species Recovery Implementation Program." This budget line-item designates the following: \$800,000 for construction and construction management activities for the San Juan River Basin Recovery Implementation Program; \$7,154,000 for construction and construction management activities for the Upper Colorado River Endangered Fish Recovery Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy.

The Upper Colorado and San Juan recovery programs are highly successful collaborative conservation partnerships working to recover the four species of endemic Colorado River fish on the Federal endangered species list; while at the same time water use and development has been able to continue in our growing western communities. These programs involve New Mexico, Colorado, Utah and Wyoming, Indian tribes, multiple Federal agencies and water, power and environmental interests in providing Endangered Species Act (ESA) compliance for water projects in the region. They also fully complying with interstate river compacts and the participating States' water law.

Since 1988, the two programs have collectively provided ESA section 7 compliance (without litigation) for over 1,850 Federal, tribal, State and privately managed water projects. The Department of the Interior recognized these programs as outstanding collaborative partnerships with its nation-wide Cooperative Conservation Award in April 2008 accomplishing substantial on-the-ground conservation results. Substantial non-Federal cost-sharing funding, exceeding 50 percent, is embodied in both programs.

As I have done in the past, I am writing to support these two region-wide cooperative recovery programs. On behalf of the State of Colorado, I request the subcommittee's assistance. It is essential that fiscal year 2011 funding be provided within the Bureau of Reclamation's budget appropriation to assure that agency's continued financial participation, as directed by Public Law 106-392.

On behalf of the State of Colorado, I thank you for the continued support and assistance of your subcommittee; it has greatly facilitated the ongoing and continued success of these multi-state and multi-agency programs.

PREPARED STATEMENT OF THE STATE OF NEW MEXICO

Dear Chairman Dorgan and Senator Bennett: I am Requesting your support for the appropriation of \$8,354,000 to the Bureau of Reclamation included in the President's fiscal year 2011 recommended budget in the Upper Colorado Region budget line-item entitled "Endangered Species Recovery Implementation Program." This budget line-item designates \$800,000 for construction and construction management activities for the San Juan River Basin Recovery Implementation Program; \$7,154,000 for construction and construction management activities for the Upper Colorado River Endangered Fish Recovery Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy.

The Upper Colorado and San Juan recovery programs are highly successful collaborative conservation partnerships working to recover the four species of endemic Colorado River fish on the Federal endangered species list. These programs are unique efforts involving the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs provide Endangered Species Act (ESA) compliance for historic and developing water projects throughout the Upper Colorado River and San Juan River basins, and respect State water laws and interstate compacts. The requested fiscal year 2011 appropriation for the San Juan River recovery program includes funding to construct a fish screen to prevent entrainment of endangered fish by diversions for historic Navajo tribal water uses in New Mexico.

Since 1988, the two programs, collectively, have provided ESA section 7 compliance (without litigation) for over 1,850 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 embodied in both programs.

The past support and assistance of your subcommittee has greatly facilitated the success of these multi-state, multi-agency programs. The State of New Mexico gratefully thanks you for that support. We again request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these two region-wide cooperative recovery programs as authorized and directed by Public Law 106-392, as amended.

PREPARED STATEMENT OF THE SAN JUAN WATER COMMISSION

Dear Chairman Dorgan and Senator Bennett: We are requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act.

I appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE CENTRAL UTAH WATER CONSERVANCY DISTRICT

Dear Chairman Dorgan and Senator Bennett: We are requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act.

I appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE COLORADO WATER CONGRESS

Dear Chairman Dorgan and Senator Bennett: We are requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act.

I appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE SOUTHERN UTE INDIAN TRIBE

Dear Chairman Dorgan and Senator Bennett: On behalf of the Southern Ute Indian Tribe, I am requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation ("Reclamation") within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation the tribe seeks on behalf of Reclamation is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, the Southern Ute Indian Tribe, the Ute Mountain Ute Indian Tribe, the Navajo Nation, and the Jicarilla Apache Nation, Federal agencies and water, power and environmental interests. The programs' objectives are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act.

The tribe appreciates the subcommittee's past support and requests the subcommittee's assistance for fiscal year 2011 funding to ensure Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF DENVER WATER

Dear Chairman Dorgan and Senator Bennett: We are requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act.

I appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

 PREPARED STATEMENT OF THE COLORADO RIVER ENERGY DISTRIBUTORS ASSOCIATION (CREDA)

Dear Chairman Dorgan and Senator Bennett: We are requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

CREDA is a non-profit organization representing the majority of the firm electric service customers of the Colorado River Storage Project. CREDA has participated in these programs since inception, and power revenues have been a key funding source of the programs. These ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests are intended to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act.

We appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

 PREPARED STATEMENT OF THE JICARILLA APACHE NATION

Dear Chairman Dorgan and Senator Bennett: On behalf of the Jicarilla Apache Nation, I am requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

The Nation has been a voluntary participant in the highly successful and widely supported program to recover endangered fish species in the San Juan River basin since 1992 and fully supports the same effort underway in the Upper Colorado River. More than 1,800 Federal, tribal and non-Federal water projects are involved in the recovery efforts, these actions have resulted in compliance with the Endangered Species Act.

I appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE SOUTHWESTERN WATER CONSERVATION DISTRICT

Dear Chairman Dorgan and Senator Bennett: We are requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act.

I appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE UNCOMPAHGRE VALLEY WATER USERS ASSOCIATION

Dear Chairman Dorgan and Senator Bennett: We are requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act.

I appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE NORTHERN COLORADO WATER CONSERVANCY DISTRICT

Dear Chairman Dorgan and Senator Bennett: On behalf of the Board of Directors of the Northern Colorado Water Conservancy District (Northern Water), I am requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the U.S. Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

These highly successful, cooperative programs are ongoing partnerships among: the States of New Mexico, Colorado, Utah and Wyoming; Indian tribes; Federal agencies; and water, power and environmental interests. The programs' objectives are to recover endangered fish species while water usage and development continue in compliance with the Endangered Species Act.

Northern Water appreciates the subcommittee's past support and requests the subcommittee's assistance for fiscal year 2011 funding to ensure the U.S. Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF AURORA WATER

Dear Chairman Dorgan and Senator Bennett: We are requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act.

I appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE COLORADO RIVER BOARD OF CALIFORNIA

This testimony is in support of fiscal year 2011 funding for the Department of the Interior for the title II Colorado River Basin Salinity Control Program (Public Law 93-320). By statute, Congress designated the Department of the Interior, Bureau of Reclamation (Reclamation) to be the lead agency for salinity control in the Colorado River Basin. This successful and cost effective program is carried out pursuant to the Colorado River Basin Salinity Control Act and the Clean Water Act (Public Law 92-500). California's Colorado River water users are presently suffering economic damages in the hundreds of million of dollars per year due to the River's salinity.

The Colorado River Board of California (Colorado River Board) is the State agency charged with protecting California's interests and rights in the water and power resources of the Colorado River system. In this capacity, California and the other six basin States through the Colorado River Basin Salinity Control Forum (Forum), the interstate organization responsible for coordinating the basin States' salinity control efforts, established numeric criteria in June 1975 for salinity concentrations in the River. These criteria were established to lessen the future damages in the Lower Basin States, as well as, assist the United States in delivering water of adequate quality to Mexico in accordance with Minute 242 of the International Boundary and Water Commission.

To date, Reclamation has been successful in implementing projects for preventing salt from entering the River system; however, many more potential projects for salt reduction have been identified that could be implemented through Reclamation's Basin-wide Salinity Control Program. In the past, the Forum has presented testimony to Congress in which it has stated that the rate of implementation of the program beyond that which has been funded in the past is essential. This is still the case, and California urges the Congress to fully fund Reclamation's continuing implementation of this critical program.

In 2000, Congress reviewed the salinity control program as authorized in 1995. Following hearings, and with the administration's support, the Congress passed legislation (Public Law 106-459) that increased the ceiling authorization for this program from \$75 million to \$175 million. Reclamation has received proposals to move the program ahead and the seven basin States have agreed to up-front cost sharing on an annual basis, which adds 43 cents for every Federal dollar appropriated.

In recent years, the Bureau of Reclamation's Basin-wide Salinity Control Program funding has dropped to below \$10 million. In the judgment of the Forum, this amount is inappropriately low. Water quality commitments to downstream U.S. and Mexican water users must be honored while the basin States continue to develop their Compact apportioned waters from the Colorado River. Concentrations of salts in the River cause about \$376 million in quantified damage in the United States. However significant un-quantified damages also, occur. For example, 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, an increase in desalination and brine disposal costs due to accumulation of salts in groundwater basins, and fewer opportunities for recycling and reuse of the water due to groundwater quality deterioration; and
- Increased use of imported water for leaching and the cost of desalination and brine disposal for recycled water.

For every 30 milligram per liter increase in salinity concentrations, there are \$75 million in additional damages in the United States. The Forum, therefore, believes implementation of the program needs to be accelerated to a level beyond that which has been requested by the administration for the past recent years.

Some of the most cost-effective salinity control opportunities occur when Reclamation can improve irrigation delivery systems in a coordinated fashion with the activities of the U.S. Department of Agriculture's (USDA) program through working with landowners (irrigators) to improve on-farm irrigation systems. With the USDA's Environmental Quality Incentive Program, more on-farm funds are available and adequate funds for Reclamation are needed to maximize Reclamation's effectiveness in addressing water delivery system improvements. The Advisory Council, at its meeting in October 2009, in Phoenix, Arizona, recommended a funding level of \$17,500,000 for Reclamation's Basin-wide Salinity Control Program to continue implementation of needed projects.

In addition, the Colorado River Board recognizes that the Federal Government has made significant commitments to the Republic of Mexico and to the seven Colorado River Basin States with regard to the delivery of quality water to Mexico. In order for those commitments to be honored, it is essential that in fiscal year 2011, and in future fiscal years, that Congress provide funds to the Bureau of Reclamation for the continued operation of completed projects.

The Colorado River is, and will continue to be, a major and vital water resource to the 18 million residents of southern California, including municipal, industrial, and agricultural water users in Ventura, Los Angeles, San Bernardino, Orange, Riverside, San Diego, and Imperial counties. Preservation and improvement of Colorado River water quality through an effective salinity control program will avoid the additional economic damages to users in California and the other States that rely on the Colorado River.

PREPARED STATEMENT OF THE IRRIGATION AND ELECTRICAL DISTRICTS ASSOCIATION
OF ARIZONA

The Irrigation and Electrical Districts Association of Arizona (IEDA) is pleased to present written testimony regarding the fiscal year 2011 proposed budgets for the Bureau of Reclamation (Reclamation) and the Western Area Power Administration (Western).

IEDA is an Arizona nonprofit association whose 26 members and associate members receive water from the Colorado River directly or through the facilities of the Central Arizona Project (CAP) and purchase hydropower from Federal facilities on the Colorado River either directly from Western or, in the case of the Boulder Canyon Project, from the Arizona Power Authority, the State agency that markets Arizona's share of power from Hoover Dam. IEDA was founded in 1962 and continues to represent water and power interests of Arizona political subdivisions and other public power providers and their consumers.

BUREAU OF RECLAMATION

IEDA has reviewed the Reclamation budget and found, not unexpectedly, that it does not address the enormous backlog of needs of the agency's aging infrastructure. We are aware, for example, that the Imperial Dam Electrification Project needs \$5 million, money that will be repaid to the Treasury with interest. However, we do support important projects and programs that are included in the proposed budget. We are especially mindful that the Yuma Desalting Plant is undergoing a pilot project, which is an essential element of the problem solving mechanisms being put

in place for the Colorado River and especially the Lower Colorado River. Problem solving on the Lower Colorado River will be substantially improved by using the plant as a management element.

We also wish to call to the subcommittee's attention the issue concerning increased security costs at Reclamation facilities post-9/11. Legislation has passed Congress addressing that issue and a budget approved for Reclamation for fiscal year 2011 should reflect that this legislation became law and affects Reclamation operations. We believe security costs under that legislation should be reduced because of a declining Consumer Price Index.

WESTERN AREA POWER ADMINISTRATION

IEDA has reviewed the testimony submitted by Western's administrator, Tim Meeks. We note that both this subcommittee and the Senate Energy and Natural Resources Committee Water and Power Subcommittee have a concern over the limited appropriation for construction funding proposed for fiscal year 2011. We believe this shortfall is irresponsible. Western has over 15,000 miles of transmission line for which it is responsible. It has on the order of 14,000 megawatts of generation being considered for construction that would depend on that Federal network. The existing transmission facilities cannot handle all of these proposals. Moreover, the region is projected, by all utilities operating in the region, to be short of available generation in the 10-year planning window that utilities and Western use.

The appropriation proposed in this category cannot come even close to keeping existing transmission construction going. Repairs and replacements will have to be postponed and considerable hardships to local utilities that depend on the Federal network are bound to occur. In Western's Desert Southwest Region, our region, work necessary just to maintain system reliability will have to be postponed.

We would be the first to support additional customer financing of Federal facilities and expenses through the Contributed Funds Act authority under Reclamation law that is available to Western. However, programs utilizing non-Federal capital formation require years to develop. One such program proposed by the Arizona Power Authority in a partnership with Western died because it was enmeshed in bureaucratic red tape at the Department of Energy. There is no way that Western customers can develop contracts, have them reviewed, gain approval of these contracts from Western and their own governing bodies, find financing on Wall Street and have monies available for the next fiscal year. It is just impossible, especially in this economy.

There are impediments to using existing Federal laws to facilitate non-Federal financing for construction of Federal electric transmission facilities and Congress should eliminate them. In the meantime, artificially designating customer funding for construction, in lieu of real solutions, is bad public policy and should not be countenanced. We urge the subcommittee to restore a reasonable amount of additional construction funding to Western so it can continue to do its job in keeping its transmission systems functioning and completing the tasks that it has in the pipeline that are critical to its customers throughout the West.

CONCLUSION

Thank you for the opportunity to submit this written testimony. If we can provide any additional information or be of any other service to the subcommittee, please do not hesitate to get in touch with us.

PREPARED STATEMENT OF APS

Dear Chairman Dorgan and Senator Bennett: We are requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives

are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act.

I appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE DOLORES WATER CONSERVANCY DISTRICT

Dear Chairman Dorgan and Senator Bennett: We are requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act.

I appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF COLORADO SPRINGS UTILITIES

Dear Chairman Dorgan and Senator Bennett: We are requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106-392, as amended.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act.

I appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE OGLALA SIOUX RURAL WATER SUPPLY SYSTEM, WEST RIVER/LYMAN JONES RURAL WATER SYSTEM, ROSEBUD RURAL WATER SYSTEM, AND THE LOWER BRULE RURAL WATER SYSTEM

FISCAL YEAR 2011 REQUEST

The Mni Wiconi Project beneficiaries respectfully request \$37.222 million in appropriations for construction and \$11.093 million for operation and maintenance (OMR) activities for fiscal year 2011, a total request of \$48.315 million:

FISCAL YEAR 2011 TOTAL REQUEST

	Amount
Construction	\$37,222,000
OMR	11,093,000
Total	48,315,000

The construction request includes \$1.0 million for Bureau of Reclamation oversight, and the OMR request includes \$1.447 million for Bureau of Reclamation oversight.

CONSTRUCTION FUNDS

Construction funds would be utilized as follows:

Project Area	Construction Request Fiscal Year 2011
Oglaala Sioux Rural Water Supply System:	
Core	(¹)
Distribution	\$22,069,000
Wesr River/Lyman-Jones RWS	3,719,000
Rosebud RWS	11,434,000
Total	37,222,000

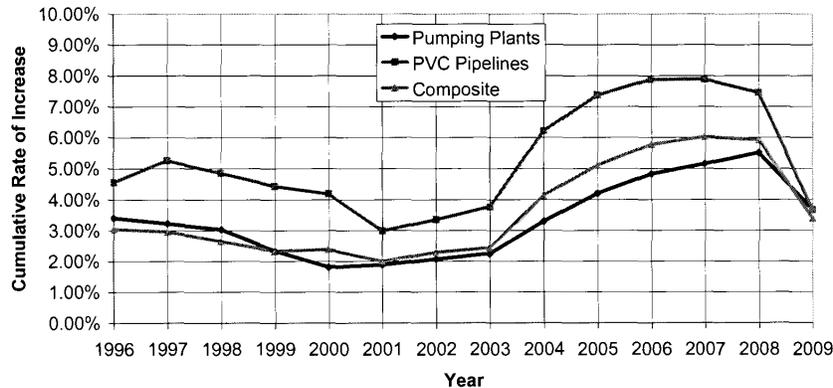
Complete.

As shown in the table below, the project will be 88 percent complete at the end of fiscal year 2010. Construction funds remaining to be spent after fiscal year 2010 will total \$54.518 million within the current authorization (in October 2009 dollars). Additional administrative and overhead costs of extending the project, additional construction costs, and inflation at 3.7 percent over the next 3 years are expected to increase remaining project costs to \$111.667 million after fiscal year 2010.

Total Federal Construction Funding (Oct 2009 dollars)	\$460,014,364
Estimated Federal Spent Through Fiscal Year 2010	\$405,496,000
Percent Spent Through Fiscal Year 2010	88.15
Amount Remaining after 2010:	
Total Authorized (Oct 2009 dollars)	\$54,518,364
Adjusted for Extension to Fiscal Year 2013 and Other Cost	\$103,958,000
Adjusted for Annual Inflation	\$111,667,000
Completion Fiscal Year (Statutory Fiscal Year 2013; Public Law 111-161)	2013
Year to Complete	3
Average Annual Required for Finish in Fiscal Year 2013	\$37,222,000

Cost indexing over the last 5 years has averaged 3.66 percent for pipelines, primarily due to a 7.7 percent reduction last year during recession. Pipelines are the principal components yet to be completed (see chart below). Assuming average 3.66 percent inflation in construction costs over the remaining 3 years, average funding of \$37.222 million is required.

**RATE OF CONSTRUCTION COST INCREASE
FOR ANNUAL AND 5-YEAR RUNNING AVERAGES SINCE 1992,
US BUREAU OF RECLAMATION**



This is an increase in the annual rate of appropriations needed to complete the project since last year's estimate of \$31.4 million. Appropriations were limited to \$22 million last year, which increases the average annual rate of funding needed to complete in 2013 on the statutory schedule.

The request will create an estimated 298 full-time equivalent (FTE) construction jobs and 89 OMR jobs in an area of the Nation with the lowest per capita income and deepest poverty.

OGLALA SIOUX RURAL WATER SUPPLY SYSTEM (OSRWSS)

Core System

The Oglala Sioux Tribe has completed the core system. The completion of the 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 2010. This is another historic year, but considerable work remains to distribute the water supply throughout the reservation. Over 40 percent of the project's population resides on the Pine Ridge Indian Reservation, and only 52 percent of the distribution system is complete. The reservation public received its first Missouri River supply in small amounts in 2009 after waiting 15 years for construction of core facilities to the reservation.

Project funds in fiscal year 2011 will continue building the on-reservation transmission system between the community of Wounded Knee and Pine Ridge Village. The latter community is the largest on the reservation and the point of greatest demand. Funding will also be used for transmission and service line development east of Pine Ridge Village toward Wakpamni, Batesland and Allen and south toward the Nebraska State line where groundwater is the most feasible water source for the future. This area has been deferred in the past due to funding constraints.

Delivery of Missouri River water to Kyle in fiscal year 2010, delayed due to funding, will allow distribution to completed OSRWSS pipelines that serve the communities of Kyle, Sharps Corner, Rocky Ford, Red Shirt, Manderson, Evergreen and Porcupine and the large number of rural homes between the communities along these pipelines. Fiscal year 2011 funds will be used to extend service south of Wanblee to Hisle.

As set forth above, activity on the Pine Ridge Indian Reservation in fiscal year 2011 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 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 im-

plemented for water quality control and SCADA systems, 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 RWS projects for fiscal year 2011 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 state-wide power outages experienced during the winters of 2005–2006 and 2009–2010. The Bureau of Reclamation 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.

System Control and Data Acquisition (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 with State and Federal assistance.

ROSEBUD SIOUX RURAL WATER SYSTEM—FISCAL YEAR 2011

In fiscal year 2011 work on the Rosebud Sioux Rural Water System (RSRWS or Sicangu Mni Wiconi) focuses on supplying high quality water to southern Todd County. 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.

Because of quality and quantity limitations of the aquifer, high quality surface water from the OSRWSS will be conveyed by a transmission pipeline to a new elevated storage reservoir at Sicangu Village. The elevated reservoir is being constructed in fiscal year 2010 with ARRA funds. Sicangu Village is an expanding housing area and the local wells cannot meet the demands associated with expansion. The transmission line and elevated reservoir will provide a reliable supply of high quality water to the development corridor centered on Highway 83 between Mission and Sicangu Village.

The other major projects will extend service to two schools in southern Todd County. The wells that supply water to 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.

While supply to meet the demands in southern Todd County was included as a contingency in the tribe's Needs Assessment and the Mni Wiconi Final Engineering Report, costs of infrastructure were not. In order to supply these schools, other areas may not be served unless an amendment authorizing an increase in the project ceiling and extending the sunset date is enacted.

The ongoing effort to connect rural homes to transmission and distribution lines will also continue in 2011. This work is undertaken through the tribe's force account program that not only provides a reliable source of high quality water to rural homes but also provides employment to numerous tribal members and helps circulate dollars on the reservation thereby stimulating the local economy.

OMR

The Sponsors will continue to work with Reclamation to ensure that their budgets are adequate to properly operate, maintain and replace (OMR) respective portions

of the core and distribution systems. The Sponsors will also continue to manage OMR expenses to ensure that the limited funds can best be balanced between Construction and OMR.

The project is treating and delivering more water each year from the OSRWSS Water Treatment Plant near Fort Pierre as construction advances 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 88 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 the Bureau of Reclamation 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 2011 is \$1,550,000.

The Mni Wiconi Project tribal beneficiaries (as listed below) respectfully request appropriations for OMR in fiscal year 2011 in the amount of \$11.093 million.

FISCAL YEAR 2011 OMR

Project Area	Request
Oglala Sioux Rural Water Supply System:	
Core	\$2,719,000
Distribution	3,100,000
Lower Brule	1,550,000
Rosebud RWS	2,277,000
Reclamation	1,447,000
Total	11,093,000

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 the Bureau of Reclamation have been extremely helpful in advancing this project, but there is growing concern that Reclamation mid-managers are making unilateral decisions that harm the trust relationship. We are also concerned with the manner of budgeting. The following are specific instances:

- Reclamation 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 Reclamation 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 the same year and the year that follows. The Oglala Sioux Tribe strongly feels that this hampers the ability of the OSRWSS to complete the OSRWSS distribution system prescribed by the statutory completion date.
- To our complete satisfaction on construction, Reclamation has yielded to the leadership of the Indian and non-Indian sponsors to permit their collaborative development of annual funding allocations and budgets. On the other hand, Reclamation has imposed its structure and budget specifics in lieu of Indian leadership on the formulation of annual OMR allocations and budgets;
- Reclamation has prioritized total budgeted funds with a separation between Construction and OMR accounts based on its trust responsibility for OMR, which constrains the budgeted 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. The trust responsibility for ensuring adequate and safe water supplies for the reservations involved necessarily includes both the construction and OMR activities;

- Mid-level managers often view the project as a Reclamation project, rather than as an Indian project as provided by Public Law 100–516, and their vision is affected.

PREPARED STATEMENT OF THE COLORADO RIVER WATER CONSERVATION DISTRICT

Dear Chairman Dorgan and Senator Bennett: I am requesting your support for an appropriation in the President's recommended budget for fiscal year 2011 of \$8,354,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$7,154,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$800,000 for construction activities for the San Juan River Basin Recovery Implementation Program; and \$400,000 for Fish and Wildlife Management and Development activities to avoid jeopardy. This funding is authorized by Public Law 106–392, as amended.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives are to recover endangered fish species in compliance with the Endangered Species Act, while maintaining water use and development.

I appreciate the subcommittee's past support and request the subcommittee's assistance for fiscal year 2011 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE SAN DIEGO COUNTY WATER AUTHORITY

Dear Chairman Dorgan: Your support is needed to secure adequate fiscal year 2011 funding for the U.S. Bureau of Reclamation's participation in the Federal/State Colorado River Basin Salinity Control Program. Reclamation is the lead agency for this successful and cost-effective program, which mitigates problems caused by excess salinity in the Colorado River.

The Colorado River is the primary source of drinking and irrigation water for more than 3 million people in San Diego County. Excess salinity causes economic damages in the San Diego region worth millions of dollars annually. It also hinders local water agency efforts to stretch limited supplies by recycling and reusing water. The local impacts of excess salinity include:

- Reduced crop yields for farmers, who produce more than \$1 billion of agricultural products in the San Diego region;
- Reduced useful life of commercial and residential water pipe systems, water heaters, faucets, garbage disposals, clothes washers, and dishwashers;
- Increased household use of expensive bottled water and water softeners;
- Increased water treatment facility costs;
- Difficulty meeting Federal and California wastewater discharge requirements; and
- Fewer opportunities for water recycling due to excess salt in the product water, which limits usefulness for commercial and agricultural irrigation.

Reclamation has been successful in implementing projects that prevent salt from entering the river system. Additional projects for salt reduction have been identified that could further improve river water quality. Some of the most cost-effective salinity control opportunities occur when Reclamation can improve irrigation delivery systems at the same time that the U.S. Department of Agriculture's (USDA) program is working with landowners (irrigators) to improve the on-farm irrigation systems. Adequate funding is needed to maximize Reclamation's effectiveness.

The Colorado River Basin Salinity Control Forum, the interstate organization responsible for coordinating the seven Colorado River Basin States' salinity control efforts, in October 2009 recommended a funding level of \$17,500,000 for Reclamation's Basin-wide salinity control program for fiscal year 2011. This funding would allow Reclamation to continue its coordinated efforts to reduce salinity in the Colorado River. The Water Authority agrees with the Forum's recommendation, and urges

your support for these needed funds. The seven Colorado River Basin States are sharing costs for salinity control, contributing 43 cents for every appropriated Federal dollar.

The Water Authority appreciates your support of the Colorado River Basin Salinity Control Program and asks for your assistance in securing adequate funding for fiscal year 2011.

PREPARED STATEMENT OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Dear Senator Dorgan: The Metropolitan Water District of Southern California (Metropolitan) has adopted a position supporting funding for the Bureau of Reclamation's Colorado River Basin Salinity Control Title II Program.

For 70 years Metropolitan has provided imported water to the Southern California region from the Colorado River and the State Water Project originating in Northern California. Our mission is to provide high quality, reliable drinking water supplies primarily for municipal and industrial use. Metropolitan is the Nation's largest provider of imported water to an urban area. The population today in our service area is 19 million and it is projected to rise to 25 million within the next 25 years. Metropolitan is comprised of 26 member public agencies that serve an area spanning 5,200 square miles and 6 southern California counties.

Water imported via the Colorado River Aqueduct (CRA) has the highest salinity of Metropolitan's imported sources of supply, averaging around 630 milligrams per liter since 1976 and causing economic damages. For example, 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 cost of water treatment and 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 fewer opportunities for recycling due to groundwater quality deterioration;
- Increased use of imported water for leaching; and
- Increased cost of desalination and brine disposal for recycled water.

Concern over salinity levels in the Colorado River has existed for many years. To deal with the concern, the International Boundary and Water Commission approved Minute No. 242, Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River in 1973, and the President approved the Colorado River Basin Salinity Control Act in 1974. High total dissolved solids in the Colorado River as it entered Mexico and the concerns of the seven Colorado River Basin States regarding the quality of Colorado River water in the United States drove these initial actions. To foster interstate cooperation on this issue and coordinate the Colorado River Basin States' efforts on salinity control, the seven basin States formed the Colorado River Basin Salinity Control Forum (Forum).

The salts in the Colorado River system are indigenous and pervasive, mostly resulting from saline sediments in the basin that were deposited in prehistoric marine environments. They are easily eroded, dissolved, and transported into the river system.

The Colorado River Basin Salinity Control Program reduces salinity by preventing salts from dissolving and mixing with the River's flow. Irrigation improvements (sprinklers, gated pipe, lined ditches) and vegetation management reduce the amount of salt transported to the Colorado River. Point sources such as saline springs are also controlled. The Federal Government, basin States, and contract participants spend close to \$50 million annually on salinity control programs.

The Program, as set forth in the act, benefits both the Upper Colorado River Basin water users through more efficient water management and the Lower Basin water users, hundreds of miles downstream from salt sources in the Upper Basin, through reduced salinity concentration of Colorado River water. California's Colorado River water users are presently suffering economic damages in the hundreds of millions of dollars per year due to the river's salinity.

By some estimates, concentrations of salts in the Colorado River cause approximately \$350 million in quantified damages in the lower Colorado River Basin States each year and significantly more in unquantified damages. Salinity control projects have reduced salinity concentrations of Colorado River water on average by over 100 milligrams per liter with an economic benefit of \$264 million per year (2005 dollars) in avoided damages.

In recent years, the Bureau of Reclamation Basin-wide Salinity Control Program funding has dropped to below \$10 million. In the judgment of the Forum, this amount is inappropriately low. Water quality commitments to downstream U.S. and Mexican water users must be honored while the Upper Basin States continue to develop their Compact apportioned waters from the Colorado River.

Metropolitan urges this subcommittee to support funding for the Colorado River Basin Salinity Control Program for fiscal year 2011 of \$17.5 million for the Department of the Interior—Bureau of Reclamation's Basin-wide Salinity Control Program for the Colorado River Basin Salinity Control Program.

Over the past years, the Colorado River Basin Salinity Control program has proven to be a very cost effective approach to help mitigate the impacts of increased salinity in the Colorado River. Continued Federal funding of this important basin-wide program is essential.

I would appreciate it if you make this statement a part of the formal hearing record concerning fiscal year 2011 appropriations for the Bureau of Reclamation. I thank you for your subcommittee's support of this program in years past and hope that you will again support funding to continue this valuable program.

PREPARED STATEMENT OF THE NEW MEXICO STATE ENGINEER AND SECRETARY, NEW MEXICO INTERSTATE STREAM COMMISSION

SUMMARY

This statement is submitted in support of fiscal year 2011 appropriations for the Colorado River Basin Salinity Control Program of the Department of the Interior's Bureau of Reclamation (Reclamation). Congress designated Reclamation to be the lead agency for salinity control in the Colorado River Basin by the Colorado River Basin Salinity Control Act of 1974, and reconfirmed Reclamation's role by passage of Public Law 104-20. A total of \$17.5 million is requested for fiscal year 2011 to implement the authorized salinity control program of the Bureau of Reclamation. Recent years have followed a trend of inadequate funding for the needs of the program. An appropriation of \$17.5 million for Reclamation'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 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 Congress to support the implementation of the salinity control program for the Colorado River Basin.

Bureau of Reclamation studies show that quantified damages from the Colorado River to U.S. water users are about \$350 million per year. Unquantified damages are significantly greater. Damages are estimated at \$75 million per year for every additional increase of 30 milligrams per liter in salinity of the Colorado River. Con-

trol 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, the United States through the U.S. 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.

Congress amended the Colorado River Basin Salinity Control Act in July 1995 (Public Law 104-20). The salinity control program authorized by Congress by the amendment has proven to be very cost-effective, and the Basin States are standing ready with up-front cost-sharing. Proposals from public and private sector entities in response to Reclamation'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 2011. The basin States' cost-sharing adds 43 cents for each Federal dollar appropriated.

Public Law 106-459 gave the Bureau of Reclamation additional spending authority for the salinity control program. With the additional authority in place and significant cost-sharing available from the basin States, it is essential that the salinity control program be funded at the level requested by the Forum and basin States to protect the water quality of the Colorado River. Some of the most cost-effective salinity control opportunities occur when Reclamation improves irrigation delivery systems concurrently with on-farm irrigation improvements undertaken by the U.S. Department of Agriculture's Environmental Quality Incentives Program (EQIP). The basin States cost-share funding is available for both on-farm and off-farm improvements. The EQIP funding appears to be adequate to accomplish the on-farm work. Adequate funding for Reclamation's off-farm work is needed to maintain timely implementation and effectiveness of salinity control measures.

Maintenance and operation of Reclamation's salinity control projects and general investigations to identify new cost-effective salinity control projects are necessary for the continued success of the salinity control program. Investigation of new opportunities for salinity control 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 Reclamation's Facility Operation activity to support maintenance and operation the Paradox Valley Unit and the Grand Valley Unit is critically needed. General Investigation funding through Reclamation's Colorado River Water Quality Improvement Program 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 the Bureau of Reclamation 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, Jack Barnett, in request of this appropriation, and the recommendation of an appropriation of the same amount by the Federal chartered Colorado River Basin Salinity Control Advisory Council.

PREPARED STATEMENT OF THE WYOMING STATE ENGINEER'S OFFICE

Dear Chairman Dorgan and Ranking Member Domenici: This letter is sent in support of fiscal year 2011 funding for the Bureau of Reclamation's Colorado River Basin Salinity Control Project—Title II Program. A total of \$17.5 million is requested for Reclamation's fiscal year 2011 activities to implement authorized Colorado River Basin salinity control program programs. Failure to appropriate these

funds will directly result in significant economic damages being accrued by U.S. and Mexican water users.

The State of Wyoming also supports funding for Salinity Control Program general investigations as requested within the Colorado River Water Quality Improvement Program budget line-item. It is important that Reclamation have properly funded planning staff in place, so that the program's progress can be monitored, necessary coordination among Federal and State agencies can be accomplished, and future projects and opportunities to control salinity can be properly planned. Maintaining the water quality standards for salinity in the Colorado River is essential so as to allow the seven Colorado River Basin States to continue to develop their compact-apportioned waters of the Colorado River.

In addition to the funding identified above for the implementation of the most recently authorized program, the State of Wyoming urges the Congress to appropriate funds, as requested by the administration, to maintain and operate completed salinity control facilities, including the Paradox Valley Unit. At facilities located within the Paradox Valley of Colorado subsurface saline brines are collected below the Delores River and are injected into a deep aquifer through an injection well. The continued operation of this project, and the Grand Valley Unit, are funded primarily through the Facility Operations activity.

The Colorado River provides municipal and industrial water for over 30 million people and irrigation water to nearly 4 million acres of land in the United States. The River is also the water source for some 2.5 million people and 500,000 acres in Mexico. Limitations on water users' abilities to make the greatest use of this critically important water supply on account of the River's high concentration of total dissolved solids (hereafter referred to as the salinity of the water) are a major concern in both the United States and Mexico. Salinity in water supplies affects agricultural, municipal, and industrial water users.

While economic detriments and damages in Mexico are unquantified, the Bureau of Reclamation presently estimates direct and computable salinity-related damages in the United States amount to \$376 million per year. The River's high salt content is in almost equal part due to naturally occurring geologic features that include subsurface salt formations and discharging saline springs; and the resultant concentrating effects of our users man's storage, use and reuse of the waters of the River system. Over-application of irrigation water by agriculture is a large contributor of salt to the Colorado River as irrigation water moves below the crop root zone, seeps through saline soils and then returns to the river system.

The Environmental Protection Agency's interpretation of the 1972 amendments to the Clean Water Act required the seven basin States to adopt water quality standards for salinity levels in the Colorado River. In light of the EPA's regulation to require water quality standards for salinity in the basin, the Governors of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming created the Colorado River Basin Salinity Control Forum as an interstate coordination mechanism in 1973. To address these international and regionally important salinity problems, the Congress enacted the Colorado River Basin Salinity Control Act of 1974. Title I addressed U.S. obligations to Mexico to control the River's salinity to ensure the U.S.A.'s water deliveries to Mexico are within the specified salinity concentration range. Title II of the act authorized control measures upstream of Imperial Dam and directed the Secretary of the Interior to construct several salinity control projects, most of which are located in Colorado, Utah, and Wyoming.

Title II of the act was again amended in 1995 and 2000 to direct the Bureau of Reclamation to conduct a basin-wide salinity control program. This program awards grants to non-Federal entities, on a competitive-bid basis, which initiate and carry out salinity control projects. The basin-wide program has demonstrated significantly improved cost-effectiveness, as computed on a dollar per ton of salt basis, as compared to the prior Reclamation-initiated projects. The Forum was heavily involved in the development of the 1974 Act and its subsequent amendments, and continues to actively oversee the Federal agencies' salinity control program efforts.

During the past 37 years, the seven-State Colorado River Basin Salinity Control Forum has actively assisted the Federal agencies, including the Bureau of Reclamation, in implementing this unique and important program. At its October 2009 meeting, the Forum recommended that the Bureau of Reclamation seek to have appropriated and should expend \$17.5 million for Colorado River Basin salinity control in fiscal year 2011. We strongly believe the combined efforts of the salinity control efforts of the Bureau of Reclamation, Department of Agriculture and the Bureau of Land Management constitute one of the most successful Federal/State cooperative non-point source pollution control programs in the United States.

The State of Wyoming greatly appreciates the subcommittee's support of the Colorado River Salinity Control Program in past years. We strongly believe this impor-

tant basin-wide water quality improvement program merits continued funding and support by your subcommittee. Thank you in advance for inclusion of this letter in the formal hearing record concerning fiscal year 2011 appropriations.

DEPARTMENT OF ENERGY

PREPARED STATEMENT OF THE STATE TEACHERS' RETIREMENT SYSTEM, STATE OF CALIFORNIA

SUMMARY

Acting pursuant to congressional mandate, and in order to maximize the revenues for the Federal taxpayer from the sale of the Elk Hills Naval Petroleum Reserve by removing the cloud of the State of California's claims, the Federal Government reached a settlement with the State in advance of the sale. The State waived its rights to the Reserve in exchange for fair compensation in installments stretched out over an extended period of time. The State respectfully requests an appropriation of at least \$9.7 million in the subcommittee's bill for fiscal year 2011, in order to meet the Federal Government's obligations to the State under the Settlement Agreement.

BACKGROUND

Upon admission to the Union, States beginning with Ohio and those westward were granted by Congress certain sections of public land located within the State's borders. This was done to compensate these States having large amounts of public lands within their borders for revenues lost from the inability to tax public lands as well as to support public education. Two of the tracts of State school lands granted by Congress to California at the time of its admission to the Union were located in what later became the Elk Hills Naval Petroleum Reserve.

The State of California applies the revenues from its State school lands to assist retired teachers whose pensions have been most seriously eroded by inflation. California teachers are ineligible for Social Security and often must rely on this State pension as the principal source of retirement income. Typically the retirees receiving these State school lands revenues are single women more than 75 years old whose relatively modest pensions have lost as much as half or more of their original value to inflation.

STATE'S CLAIMS SETTLED, AS CONGRESS HAD DIRECTED

In the National Defense Authorization Act for fiscal year 1996 (Public Law 104-106) that mandated the sale of the Elk Hills Reserve to private industry, Congress reserved 9 percent of the net sales proceeds in an escrow fund to provide compensation to California for its claims to the State school lands located in the Reserve.

In addition, in the act Congress directed the Secretary of Energy on behalf of the Federal Government to "offer to settle all claims of the State of California . . . in order to provide proper compensation for the State's claims." (Public Law 104-106, § 3415). The Secretary was required by Congress to "base the amount of the offered settlement payment from the contingent fund on the fair value for the State's claims, including the mineral estate, not to exceed the amount reserved in the contingent fund." (Id.)

Over the year that followed enactment of the Defense Authorization Act mandating the sale of Elk Hills, the Federal Government and the State engaged in vigorous and extended negotiations over a possible settlement. Finally, on October 10, 1996 a settlement was reached, and a written Settlement Agreement was entered into between the United States and the State, signed by the Secretary of Energy and the Governor of California, under which the State would receive 9 percent of the sales proceeds in annual installments over an extended period.

The Settlement Agreement is fair to both sides, providing proper compensation to the State and its teachers for their State school lands and enabling the Federal Government to maximize the sales revenues realized for the Federal taxpayer by removing the threat of the State's claims in advance of the sale.

FEDERAL REVENUES MAXIMIZED BY REMOVING CLOUD OF STATE'S CLAIM IN ADVANCE OF THE SALE

The State entered into a binding waiver of rights against the purchaser in advance of the bidding for Elk Hills by private purchasers, thereby removing the cloud over title being offered to the purchaser, prohibiting the State from enjoining or oth-

erwise interfering with the sale, and removing the purchaser's exposure to treble damages for conversion under State law. In addition, the State waived equitable claims to revenues from production for periods prior to the sale. The Reserve thereafter was sold for a winning bid of \$3.53 billion in cash, a sales price that substantially exceeded earlier estimates.

CONGRESS SHOULD APPROPRIATE \$9.7 MILLION FOR THE FISCAL YEAR 2011 INSTALLMENT OF ELK HILLS COMPENSATION

The State's 9 percent share of the adjusted Elk Hills sales price of \$3.53 billion is \$317.70 million. To date, Congress has appropriated seven installments of \$36 million and one installment of \$48 million that was reduced to \$47.52 million by the 1 percent across-the-board rescission under the fiscal year 2006 Defense Appropriations Act, for total appropriations to date of \$299.52 million of Elk Hills compensation owed to the State. Accordingly, the Elk Hills School Lands Fund should have a positive balance of at least \$18.18 million.

In the past, Department of Energy personnel have proffered 4 purported grounds for suspending further payments of Elk Hills compensation to the State. Each of these is a "red herring":

Red Herring No. 1.—Finalization of respective equity shares of Federal Government and ChevronTexaco as selling co-owners of Elk Hills oil field still not completed. The administration's fiscal year 2011 budget request states that "the timing and levels of any future budget request (for Elk Hills compensation) are dependent on the schedule and results of the equity finalization process" between the Federal Government and ChevronTexaco to determine the relative production over the years from their respective tracts in the Elk Hills field. (fiscal year 2011 budget appendix, at p. 435). But DOE already has held back \$67 million, including \$6.03 million from the State's share, to protect the Federal Government's interests in a "worst case scenario" for this equity process. The State has agreed to a "hold-back" of that amount to protect the Federal Government's interest. This reduces the available balance in the Elk Hills School Lands Fund to \$12.15 million. In addition, DOE's fiscal year 2011 budget request detail states that the equity determination is in its final stages: "Of the four applicable zones (in Elk Hills), the Dry Gas Zone and Carneros Zone are finalized. The Office of Hearings and Appeals is asking for additional briefs from both parties before rendering their decision on the Stevens Zone (the largest in Elk Hills). A final recommendation for the Shallow Zone is pending." (p. 754). Accordingly, remaining uncertainty in the equity process thus provides no basis for withholding further payment of the State's Elk Hills compensation.

Red Herring No. 2.—There is no money left in the Elk Hills School Lands Fund right now. The administration's fiscal year 2011 budget request states: "Under the Act (that mandated the sale of Elk Hills), 9 percent of the net proceeds were reserved in a contingent fund in the Treasury for payment to the States. . . . Under the settlement agreement, \$300 million has been paid to the State of California." (fiscal year 2011 budget appendix, at p. 435). The fiscal year 1999 budget request at the time of the sale notes that \$324 million was deposited into the Elk Hills School Lands Fund. (fiscal year 1999 budget appendix, at pp. 378–9). A post-sale adjustment to the Elk Hills sales price reduced this amount to \$317.7 million. Accordingly, after deducting the \$300 million in payments to the State to date and the \$6 million hold-back to protect the Federal Government's interests in the "worst case" scenario for the equity process, the Elk Hills Fund has ample funds available for appropriation of a further payment of compensation to the State.

Red Herring No. 3.—No payment can be made to the State because of pending litigation between ChevronTexaco and DOE. DOE has pointed to pending litigation brought by ChevronTexaco against DOE in the U.S. Court of Federal Claims (Docket No. 04–1365C) as a reason to suspend further payments to the State. This litigation alleges DOE personnel committed misconduct in the equity finalization process by having improper ex parte contacts and having the same DOE staff serve as both advocate for DOE's position and advisor preparing the decision documents for the decisionmaker. However, the California State Attorney General has analyzed this litigation and advised that this litigation is a claim for money damages for DOE staff misconduct that has no effect on the Federal Government's equity share, and so there is no effect on the State's share of compensation. Indeed, under the governing agreement between DOE and Chevron, Chevron had waived any right to contest the final equity determination in court. In any event, the trial in this litigation was completed at the end of 2009, and a decision is expected by Spring.

Hence this litigation provides no basis for withholding the rest of the State's compensation.

Red Herring No. 4.—No payment can be made to the State because the State's share must be reduced by the equity finalization costs and environmental remediation costs and the final amount of such costs is not yet known. The State's share of compensation is properly reduced by the "direct costs of sale" as required by Congress. Since the sale took place over a decade ago, those costs are fixed and known. The State has agreed to bear its share of these sales expenses. However, DOE is seeking to charge against the State's share two additional categories of costs—costs of determining the equity ownership and environmental remediation—that constitute ongoing costs of operating the oil field, not sales expenses. The California State Attorney General advises that these do not properly constitute sales expenses chargeable against the State's share.

More specifically, the Settlement Agreement between the Federal Government and the State provides that the Federal Government shall pay the State "9 percent of the proceeds from the sale of the Federal Elk Hills Interests that remain after deducting from the sales proceeds the costs incurred to conduct such sale." This reflects the congressional direction that, "In exchange for relinquishing its claim, the State will receive 7 (9 in the final legislation) percent of the gross sales proceeds from the sale of the Reserve that remain after the direct expenses of the sale are taken into account." (House Rept. No. 104-131, Defense Authorization Act for fiscal year 1996, Public Law 104-106).

The State has agreed that the \$27.13 million incurred for appraisals, accounting expenses, reserves report, and brokers' commission are appropriate sales expenses. Accordingly, the State's 9 percent share of these proper sales expenses reduces the available balance of the Elk Hills School Lands Fund by \$2.44 million to \$9.7 million.

Costs of conducting the equity adjustment are properly viewed as ongoing costs incurred due to the joint operation of the Elk Hills oil field by the Federal Government and ChevronTexaco, since the equity adjustment already was required under their joint operating agreement and related to pre-sale production revenues. Similarly, costs of environmental remediation of the Elk Hills field was a cost attributable to the prior operation of the field, which created any environmental problems that exist. The ongoing operational nature of this cost is underscored by the fact that the Federal Government is currently engaged in the phased environmental remediation of a Naval Petroleum Reserve that it is not selling—NPR-3 (Teapot Dome), as evidenced by the fiscal year 2011 budget request.

In conclusion, of the current Elk Hills School Lands Fund balance of \$18.18 million, taking into account the "hold-back" for worst case scenario under equity finalization and deducting the appropriate direct costs of conducting the sale, the State respectfully requests the appropriation of at least \$9.7 million for Elk Hills compensation in the subcommittee's bill for the fiscal year 2011 installment of compensation, in order to meet the Federal Government's obligations to the State under the Settlement Agreement.

PREPARED STATEMENT OF PRECISION CUSTOM COMPONENTS, LLC

Dear Mr. Chairman and ranking member: Precision Custom Components, LLC (PCC), located in York, PA, is a manufacturer of custom fabricated pressure vessels, reactors, casks, and heavy walled components for the nuclear power industry and U.S. Navy. Since 1876 the company has made large industrial turbines, nuclear reactor internals for the first commercial nuclear power plant in Shippingport, PA, and spent nuclear fuel shipping casks for the Navy and commercial power plants. In sum, PCC has been an integral part of the U.S. manufacturing base for well over a century.

The President's request for \$38.8 million for research, development and demonstration of small, modular nuclear power reactors is a modest but well thought out program involving both public and private investments. This request for funding is coming at just the right time when engineering and design firms have presented credible new reactor designs that are well within the capabilities of the U.S. manufacturing industry, including PCC. But it is the time consuming and costly regulatory review process at the NRC where joint Federal-private assistance is needed.

The benefits of small, modular nuclear reactors are well documented; from creating U.S. jobs, to creating new sources of carbon-free baseload power, to improving the financial risk otherwise associated with larger power plants. These innovations will also incorporate some of the latest safety features and proliferation resistant technologies bringing additional public benefits and export opportunities.

If you could make this correspondence part of the record for outside witness testimony PCC would like to be on record as supporting the President's budget request

for \$38.8 million for the Department of Energy's small, modular reactor program in fiscal year 2011, including and encompassing light water reactor (LWR) based designs and other technologies.

PREPARED STATEMENT OF THE NATIONAL INSULATION ASSOCIATION AND THE INTERNATIONAL ASSOCIATION OF HEAT AND FROST INSULATORS AND ALLIED WORKERS

FEDERAL FUNDING FOR MECHANICAL INSULATION WILL CREATE SHOVEL READY, GREEN ENERGY JOBS ALL WHILE SAVING ENERGY AND PROTECTING THE ENVIRONMENT

Chairman Dorgan, Ranking Member Bennett, and members of the Subcommittee on Energy and Water Development, on behalf of the National Insulation Association (NIA) and the International Association of Heat and Frost Insulators and Allied Workers (International Union), we are writing in support of a programmatic increase to \$3.5 million in fiscal year 2011 for the Department of Energy's Industrial Technologies Program specifically for a national mechanical insulation education and awareness program.

NIA represents 95 percent of the products utilized in the mechanical insulation industry, with members across the country at 800 corporate locations, and the International Union represents more than 25,000 workers and families employed in the mechanical insulation sector across the country. Together, our members, of which the vast majority are small businesses, have more than a century-long track record of providing large- and small-scale, long-term energy efficiency, emissions reductions, cost savings, and safety benefits at manufacturing facilities, power plants, refineries, hospitals, universities, and government buildings across the country.

We have joined together to advocate for a national comprehensive advocacy program for increased use, maintenance, and retrofits of mechanical insulation in the commercial and industrial sectors because of its potential to create tens of thousands of jobs now, reduce carbon emissions, increase energy savings, and provide a safer working environment.

Buildings are responsible for 40 percent of U.S. energy demand and 40 percent of all greenhouse gas emissions, making efficiency gains in this area crucial if we are to markedly reduce America's energy consumption and effectively combat climate change. The industrial sector is similar in energy efficiency opportunities. At the residential level, insulation is well publicized for its efficiency benefits. However, the same cannot be said in the commercial and industrial sectors, which together consume 2½ times more energy than homes, according to the Energy Information Administration. Commercial and industrial insulation—collectively known as mechanical insulation—has the potential to slash the energy demand for the building and industrial sector.

Congress has already signaled its support for a mechanical education and awareness program through both the appropriations and authorization process. Congress directed \$500,000 be allocated in the Department of Energy's budget for a mechanical insulation education and awareness campaign in the fiscal year 2010 Energy and Water Appropriations bill (Public Law 111-85). This funding was a critical start, and we thank members of the Appropriations Committee for recognizing the value of this program, but more is needed to carry out a successful campaign. Further evidence of Congress' support for such a program is the inclusion of language to authorize a 5-year, \$3.5 million a year national industrial energy efficiency education and training initiative focused on mechanical insulation in H.R. 2454, the American Clean Energy and Security Act of 2009 (section 275, page 521).

By increasing awareness and use of this energy-saving technology, Congress will both create jobs now and reduce carbon emissions. Creating jobs, particularly green jobs, is a top priority for Congress and the administration. Using government data, NIA conservatively estimates that maintenance of insulation at industrial facilities and going beyond minimum levels in new construction can generate \$4.8 billion in energy savings per year, reduce 43 million metric tons of carbon dioxide and other greenhouse gas emissions, and create 89,000 jobs annually.

Best of all, these jobs don't require additional research and development. Mechanical insulation opportunities can be easily identified, with potential energy savings and emissions reduction determined with proven DOE-utilized software technology, and in many applications implemented in weeks, making projects truly shovel-ready.

For facility owners and operators, the savings are swift and last for many years; the return on investment from mechanical insulation is typically less than 2 years (and sometimes as little as 6 months). Mechanical insulation also improves infrastructure in the public, educational, and health-care sectors, among others.

Fiscal year 2010 funding for mechanical insulation education programs is insufficient to make an economic impact in the industrial and commercial sector through energy savings, emissions reduction, and job creation. Increased funding from Congress in fiscal year 2011 would enable Federal agencies and industry partners to gather more data, work with engineering schools, and reach out to facility managers and owners, engineering and design professionals, and others to educate them about the benefits of increasing their focus on the benefits of mechanical insulation technology. Congressional funding would also ensure the promotion of the most energy-efficient uses of mechanical insulation in new construction, increased education about the energy savings that can be realized through proper maintenance and a renewed focus on retrofitting mechanical insulation in older buildings and manufacturing facilities that together will generate substantial carbon emissions reductions and sustainable jobs.

NIA and the International Union have cumulatively contributed \$3.0 million in developing and beginning the implementation of the campaign and are committed to matching the fiscal year 2011 funding to a \$500,000 level. As such, we have outlined program elements for a comprehensive, persuasive awareness campaign to engage and motivate industrial and commercial decisionmakers to take action.

Elements of the program would include:

- Develop curriculum and conduct NIA-led educational sessions
- Utilize web-based information for educational programs
- Provide educational programs at industry and government conferences and workshops
- Implement awareness and educational marketing and advertising campaign
- Develop needed data and seek media coverage of success stories and the facts
- Engage NIA and Union members and other allies to actively support the campaign

NIA, its members, and the International Union are committed to working with Congress, the Department of Energy, other Federal agencies, and key stakeholder groups on these and other initiatives that will lead to greater energy efficiency nationwide. We have formed alliances with engineering and other industry trade organizations and have offered to work with the Department of Energy to bring together a coalition to help develop, implement, and provide educational awareness programs established and funded by Congress.

Thank you for the opportunity to submit testimony in support of a program that is critical to job creation, economic growth, energy savings, and emissions reductions.

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 \$5.12 billion for the Department of Energy's Office of Science for fiscal year 2011. The testimony highlights the importance of biology, particularly plant biology, as the Nation seeks to address vital issues including climate change and energy security. We would also like to thank the subcommittee for its consideration of this testimony, for its strong support for the basic research mission of the Department of Energy's Office of Science, and for recognizing that funding for the Office of Science is an investment in America's future.

ASPB is an organization of more than 5,000 professional plant biologists, educators, graduate students, and postdoctoral scientists. A strong voice for the global plant science community, our mission—which is achieved through engagement in the research, education, and public policy realms—is to promote the growth and development of plant biology and plant biologists and to foster and communicate research in plant biology. The Society publishes the highly cited and respected journals *Plant Physiology* and *The Plant Cell*, and it has produced and supported a range of materials intended to demonstrate fundamental biological principles that can be easily and inexpensively taught in school and university classrooms by using plants.

FOOD, FUEL, CLIMATE CHANGE, 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 almost always the primary producers in the Earth's ecosystems. Indeed, plant biology research is making many fundamental contributions in the areas of fuel security and environmental stewardship; the continued and sustainable de-

velopment of better foods, fabrics, and building materials; and in the understanding of basic biological principles that underpin improvements in the health and nutrition of all Americans. To go further, plant biology research can help the Nation both predict and prepare for the impacts of climate change on American agriculture, and it can make major contributions to our Nation's efforts to combat global warming.

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 the DOE—underpins so many vital practical considerations for our country, the amount invested in understanding the basic function and mechanisms of plants is relatively small when compared with the impact it has on multibillion dollar sectors of the economy like energy and agriculture.

RECOMMENDATIONS

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 Department of Energy's Office of Science. Our recommendations, in no particular order, are as follows:

- We commend the DOE Office of Science, through their Divisions of Basic Energy Sciences (BES) and Biological and Environmental Research (BER) for funding the Bioenergy Research Centers (BER) and the Energy Frontier Research Centers (BES). Although these efforts are well designed and a significant step forward, these large centers will not have a monopoly on good ideas. Therefore, ASPB strongly encourages the appropriation of additional funds for the DOE Office of Science that would be specifically targeted to the funding of individual or small group grants for bioenergy research.
- The DOE Office of Science is the primary funding agency for physical science research. Past experience teaches us that many major scientific and technical breakthroughs occur at the interface between traditional scientific disciplines. Indeed, the importance of disciplinary integration is a central theme of the recent National Research Council report "A New Biology for the 21st Century: Ensuring the United States Leads the Coming Biology Revolution." Therefore, ASPB recommends appropriations that would specifically target the interface between plant biology and the physical sciences to encourage multidisciplinary and cross-disciplinary research that would address significant problems in bioenergy research.
- Photosynthetic research is one clear example of an interface between the physical sciences and biology. The DOE Office of Science has been the major source of funds for fundamental studies of photosynthesis, which is the primary source of chemical energy on the planet. After all, fossil fuels are just photosynthetic energy that was trapped eons ago and converted through natural processes into the forms in which we use it today. 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 an increase in appropriations to the Office of Science to expand its research portfolio in the area of photosynthesis and carbon capture.
- There are significant questions that must be answered as to how climate change will impact food production and the environment. There are also clear opportunities to use biological systems to ameliorate climate change, such as through carbon sequestration or modification of plants to resist environmental stress. Therefore, ASPB calls for additional funding focused on studies of the effect of climate change on agricultural cropping systems, basic studies of effects on plant growth and development, and targeted research focused on modification of plants to resist climate change and for use in carbon sequestration.
- Current estimates predict a significant shortfall in the needed scientific and engineering workforce in the energy area. Given the expected need for additional scientists and engineers who are well-grounded in interdisciplinary research and development activities, ASPB applauds DOE's Early Career Research Program and calls for additional funding of specific programs (e.g., training grants) that are targeted to provide this needed workforce over the next 10 years and to adequately prepare them for careers in the interdisciplinary energy research

of the future. It should be noted that this recommendation is also directly in line with the above mentioned “New Biology” report from the NRC.

—Computational biology is a relatively new discipline that arose from the interface of computer science and biology. These new technologies and approaches provide the only means by which these large biological datasets can be integrated and mined for new, relevant biological knowledge. Therefore, as discussed in item 2 above, ASPB calls for additional funding that would target this interface between biology and computer science. Specifically, we call for additional funding to develop computational platforms to develop a systems-level view of biology through the integration of data obtained from a variety of functional genomics approaches. This is clearly a “grand challenge” that is currently limiting the utility of this information. The above mentioned NRC report reinforces this point through the recommendation that “priority be given to the development of new information technologies.” One means to address this need would be to expand the BER KnowledgeBase initiative that is now only a pilot program.

—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 additional funding that would be targeted to efforts to increase the utility and agronomic performance of bioenergy crops.

Thank you for your consideration of our testimony on behalf of the American Society of Plant Biologists. Please do not hesitate to contact the American Society of Plant Biologists if we can be of any assistance in the future.

PREPARED STATEMENT OF THE NATIONAL MINING ASSOCIATION (NMA)

Excess Uranium Sale.—Under current law, the Department of Energy (DOE) can sell excess Government uranium inventories only after a Secretarial Determination that such sales or transfers (1) will not adversely impact the domestic uranium mining, conversion or enrichment industries and (2) will obtain fair market value for such sale or transfer. In December 2008, after obtaining a consensus agreement from the nuclear industry, DOE published a plan to manage the sale or transfer of excess Government uranium inventories. Critical to the plan were (1) gradually ramped up sales in the early years of the plan (2) sales of initial cores for new domestic reactors and (3) the establishment of an emergency reserve for current nuclear reactors. In July 2009, DOE announced plans to not follow the plan and to use uranium barter transactions to fund accelerated cleanup of the Portsmouth Ohio Enrichment Plant. Last year, the Energy and Water Appropriations members responded to DOE’s proposal and directed GAO to evaluate the Department’s management of the excess uranium inventories. The members also increased funding for the Portsmouth cleanup. Over the domestic mining industry’s objections and USEC’s acknowledgment that DOE’s proposal would adversely impact the uranium market, DOE initiated the barter transaction with USEC in the fourth quarter of 2010. The current budget request for Portsmouth cleanup will remove the need for adverse excess uranium sales, allow DOE to follow its management plan, and accelerate cleanup reducing the total amounts required to complete cleanup of the site.

Loan Guarantee Program.—NMA was pleased to see the DOE move forward in its request for additional authorizations for the title XVII loan guarantee program. We firmly believe that this program, in conjunction with other Federal financial incentives, can be used to encourage the development of clean energy sources. We are however concerned that the additional authorizations did not include all clean energy sources such as coal with advanced technologies and carbon capture and sequestration. Given the substantial role coal plays in our energy mix, we encourage the Department of Energy to include them as they continue to advance funding mechanisms for other clean energy sources.

Office of Fossil Energy

Background.—NMA is disappointed that the U.S. Department of Energy (DOE) fiscal year 2011 request severely reduced the overall fossil energy budget, with steep declines in funding for coal programs. While we recognize that the economic stimulus package enacted last year included demonstration project and Clean Coal Power Initiative funding, we do not believe that such funding justifies the 20 percent cut to all fossil energy programs, in the fiscal year 2011 budget request. Reductions of this magnitude will compromise advances in clean coal and carbon capture and sequestration efforts. Such cuts also jeopardize future funding of the projects

by forcing them to continually rely on supplemental spending bills. We would encourage the administration to submit line item requests for these programs through the regular budget process. In providing greater budgeting stability these programs will be better equipped to achieve their intended goals within a timely manner.

—NMA fully supports and urges maximum funding for carbon capture and storage (CCS) projects that avoid, reduce or store air pollutants and greenhouse gases while contributing long-term economic growth and international competitiveness. Substantial Federal funding for continued research, development and demonstration of CCS technologies will be required before CCS can be applied to large-scale commercial power plants. The construction and operation of near-zero emission and low carbon projects, such as the proposed FutureGen project in Mattoon, Illinois are indispensable to demonstrate that the technology necessary to meet domestic energy demands of the 21st century are available on a commercial scale. NMA strongly supports the recent agreement between the DOE and the FutureGen Alliance to proceed with a reconfigured carbon capture and storage energy facility at Mattoon, Illinois. We support the \$1 billion from the American Recovery and Reinvestment Act for use in this endeavor along with the \$800 million for the Clean Coal Power Initiative (CCPI). Although CCPI received the necessary funding to complete solicitations for the third round of the program, we believe additional funding is necessary to meet the administration's programmatic goal of wide scale CCS deployment by 2016. The number of large scale commercial demonstration projects that are currently underway is insufficient to meet this deadline. We remain concerned that DOE continues to not request any funding for large scale applications of CCS technology as has been the case in fiscal year 2010 and fiscal year 2011. NMA encourages DOE to provide support for a strong domestic CCS program and to initiate a CCPI Round 4 program.

—Funding for basic research and development of new, innovative clean coal technologies is necessary to continue the progress made over the last 35 years. Regulated emissions from coal-based electricity generation have decreased by nearly 40 percent since the 1970s, while the use of coal has tripled. Well-funded basic coal research by DOE and clean coal technology demonstrations undertaken by DOE-private sector partnerships will continue this significant progress in energy production and environmental improvement. Technological advancements achieved in the base coal research and demonstration programs such as gasification, advanced turbines and carbon sequestration provide the component technologies that will ultimately be integrated into the FutureGen project as recently reconfigured. NMA supports funding several of these programs at levels higher than the President's request, specifically \$80 million for IGCC/gasification (DOE's requested amount: \$55 million), \$45 million for advanced combustion (DOE's request does not include direct funding) and \$31 million for advanced turbines (DOE's request: \$31 million). We are, however, pleased that DOE provides nearly \$143 million for the Carbon Sequestration Research & Development program and Carbon Sequestration Injection Tests combined. We hope that DOE will work with industry to identify specific programmatic activities and funding for these programs. The increase in funding for these and other programs will ensure that the FutureGen project meets the intended goals outlined in DOE's 2004 report to Congress, "FutureGen, Integrated Sequestration and Hydrogen Research Initiative—Energy Independence through Carbon Sequestration and Hydrogen from Coal."

—In addition, NMA recommends \$3 million of funding for the Center for Advanced Separation Technologies (CAST), which is a consortium of seven universities lead by Virginia Tech. CAST has developed many advanced technologies that are used in industry to produce cleaner fuels in an environmentally acceptable manner, with some having cross-cutting applications in the minerals industry.

Coal Tax Provisions

NMA objects to the fiscal year 2011 budget singling out coal mining for \$2.3 billion worth of tax increases. U.S. coal producers play an integral role in fostering the Nation's continued economic prosperity by meeting much of America's growing energy needs. To maintain affordable energy prices and preserve jobs, Congress should reject these unwarranted proposals to eliminate longstanding tax rules affecting coal mining.

NMA does not support the administration's proposal to eliminate the capital gains treatment of coal and lignite royalties. Under current law, royalties received on the disposition of coal or lignite generally qualify for treatment as long-term capital gain, and the royalty owner does not qualify for percentage depletion with respect

to the coal or lignite. The fiscal year 2011 budget proposes to repeal the capital gain treatment of coal and lignite royalties and to tax those royalties as ordinary income. There is no tax policy reason to single out coal royalties for changes to the capital gains rules.

NMA does not support the administration's proposal to eliminate the domestic manufacturing deduction. Under current law, a deduction is allowed with respect to income attributable to domestic production activities (the manufacturing deduction). The fiscal year 2011 budget proposes to repeal the manufacturing deduction for gross receipts derived from the sale, exchange or other disposition of coal, other hard mineral fossil fuels, or a primary product thereof. Present law should be retained as Congress enacted an across-the-board domestic manufacturing deduction in order to reduce the effective corporate income tax rate on domestic manufacturing activities and preserve U.S. manufacturing jobs.

NMA does not support the administration's proposal to eliminate the present law tax-expensing of coal exploration costs. Under current law, taxpayers may elect to expense (i.e., deduct in the year the costs are incurred) mining exploration and development costs with respect to domestic ore and mineral deposits. The fiscal year 2011 budget proposes to repeal expensing and 60-month amortization of exploration and development costs relating to coal and other hard mineral fossil fuels. The expensing of coal mining exploration costs is part of the current calculation for appropriately measuring taxable income from coal and other mining operations. That appropriate measurement of taxable income under present law should not be changed as a way of increasing taxes on the coal industry.

NMA does not support the administration's proposal to eliminate the percentage depletion tax-deduction for mining activities. Under current law, the capital costs of mines are recovered through the depletion tax deduction. Under the percentage depletion method, the amount of the deduction is a statutory percentage of the gross income from the mining property. The fiscal year 2011 budget proposes to repeal percentage depletion with respect to coal and other hard mineral fossil fuels. The percentage depletion deduction is part of the current calculation for appropriately measuring taxable income from coal and other mining operations. Coal mining requires significant financial commitments to long-term projects to deliver a reasonably priced product. Enormous amounts of capital must be expended at the front end of coal mining projects to realize future returns. With such sizable capital costs, cost recovery through percentage depletion has a significant effect on the margins and prices at which coal can be profitably sold.

U.S. ARMY CORPS OF ENGINEERS—REGULATORY AND CIVIL WORKS PROGRAMS

Background.—The U.S. Army Corps of Engineers' (Corps) Regulatory Branch plays a key role in the U.S. economy through the Corps annual authorizations of approximately \$200 billion of economic activity through its regulatory program. NMA supports the inclusion of language directing the Corps to dedicate sufficient personnel and financial resources needed to support an efficient permit review process. We remain concerned about the backlog of surface coal mining permits and encourage the Corps to utilize this increased funding expeditiously to address this issue as outlined in their statutory authority.

Regulatory Program

NMA supports increased funding for administering the Corps' Clean Water Act (CWA) section 404 permit program. We encourage the Corps to utilize this funding to address the backlog of surface coal mining permits and to devise a more efficient permitting program.

Civil Works Programs

NMA opposes the Corps' proposed concept of a new inland waterways "lockage fee/tax," which would replace the current diesel fuel tax to fund improvements to the Nation's inland waterways system. A lockage tax would more than double the taxes paid by the towing industry. The coal industry ships approximately 185 million short tons of coal annually on the inland waterways systems, therefore the cost of a new tax will ultimately be borne by the consumers of coal-fueled electricity. NMA opposes such a tax increase and urges Congress to reject this proposal.

PREPARED STATEMENT OF AVÁLENCE, LLC

Dear Senator Dorgan and Senator Bennett: I am writing to request that you fund DOE Hydrogen and Fuel Cell program at the level of support being requested by the National Hydrogen Association and the U.S. Fuel Cell Council:

INDUSTRY PROPOSED DOE HYDROGEN AND FUEL CELL FUNDING

[In millions of dollars]

	Amount
EERE Programs	220.0
Fossil Energy Programs	118.8
Nuclear Energy Programs	8.5
Science Programs	38.0
Total	390.0

Aváence is a producer of high-pressure hydrogen generators that use solar, wind and other renewable energy to make local, sustainable, and emissions-free hydrogen fuel for fuel cell and other hydrogen vehicles. Aváence is manufacturing hydrogen fueling stations, many of which are powered by renewable energy to create completely local, zero emissions fuel.

The hydrogen economy is starting to happen. At a recent U.S. Senate briefing, representatives from major automotive companies like GM and Daimler reaffirmed their companies' commitment to producing commercial hydrogen fuel cell vehicles by 2015. Several countries such as Germany and Japan have hydrogen infrastructure plans in place. DOE development and commercialization funding for hydrogen and fuel cells leverages the billions of dollars already invested in FCVs by the global automotive industry—at the very moment in time that they are deploying the first fleets of vehicles and are seeking the hydrogen infrastructure needed to bring their vehicles to market.

New hydrogen production technologies are a critical part of the portfolio of clean energy solutions that are emerging to address the decline in global oil reserves. Development of advanced hydrogen production technologies is being spearheaded throughout the Nation by many pioneering small businesses such as Aváence, LLC—small, high tech firms with exciting clean energy solutions. Our national energy security and the strength of our economy in the new energy age will benefit most from a robust national portfolio of hydrogen generating technologies that includes not only hydrogen production from fossil fuels, but also distributed generation of hydrogen from grid electricity and green hydrogen from solar, wind and other renewable energy sources.

PREPARED STATEMENT OF CYNTHIA RAMSEUR, MEMBER, GULF COAST CONSERVATION
COALITION AND GULF RESTORATION NETWORK

Summary of My Testimony.—As I understand it, the Senate subcommittee is receiving comments through April 1 regarding the energy budget. I was pleased to learn that the President's proposed budget does not include funds for studies, investigations or land acquisitions for the DOE's proposed Richton Salt Dome Strategic Petroleum Reserve. I am writing to ask that you uphold the President's budget request regarding the Richton proposal. I sincerely ask that you disallow any last-minute requests to add a budget line item for further expenditures regarding the proposed Richton SPR. If I understand correctly, over \$80 million have already been spent to date on investigations and studies regarding the project: I do not want the Federal Government to continue "throwing good money after bad money".

Full Testimony.—I am one of 400 plus people who stood up in a public hearing on April 10, 2008 in Pascagoula, Mississippi and opposed the development of a strategic petroleum reserve at Richton, Mississippi. Since that time, the coalition of individuals and organizations opposing the project has grown—yet we can not get consistent information about the DOE's continued interest in the proposed Richton SPR or information about the status of the NEPA process.

RICHTON PROJECT TIMELINE

At the April 2008 public hearing DOE announced plans for the Richton Strategic Petroleum Reserve 3 days after Hurricane Katrina (Aug 2005).

DOE held public hearings for the project in Jackson during the 3-month period after Katrina.

DOE presented the plan to Congress in June 2007.

DOE released EIS in fall of 2007 with construction to begin in January 2008.

At the urging of local concerned citizens, Congressman Gene Taylor obtained a pause and public hearings were held in April 2008.

Supplemental EIS was to be released in June 2008 but was delayed until August 2008.

Supplemental EIS scheduled for release in August was delayed again without notice of reschedule.

Current status?

I am pleased to learn that funding for the Richton SPR is not included in the President's proposed budget; however, I am writing to ask that you continue to withhold funding for the proposed SPR at Richton disallowing any requests to add in a line item at the last minute. If I understand correctly over \$80 million have been spent to date on investigations and studies regarding the DOE's proposal. I do not want the Federal Government to continue "throwing good money after bad money." The major problems identified in the initial Environmental Impact Statement remain: DOE failed to adequately examine the economic and environmental effects of the proposed project. If I understand correctly over \$80 million have been spent to date on investigations and studies regarding the DOE's proposal.

The proposed SPR expansion at Richton, Mississippi was ill-conceived, ill-advised and technically flawed. The NEPA process was a waste of taxpayer money. Note: The facts and figures presented here were collected by a coalition of citizens and organizations led by Gulf Coast Conservation Coalition and Gulf Restoration Network; the information comes directly from the Department of Energy SPR Web site at www.fossil.energy.gov/programs/reserves/.

THE RICHTON SPR EXPANSION SITE—AN ENVIRONMENTAL DISASTER

This proposed project is seriously flawed on many levels and DOE has refused to honestly evaluate and disclose the dangers. Their publications and public statements have misrepresented the facts.

DOE plans to draw 50 million gallons of fresh water per day from the Pascagoula River Merrill, Mississippi every day for 5 to 6 years and pipe it to Richton to dissolve underground salt deposits. The loss of that water would be harm the fish, animals, and humans that depend on the river's abundant flow. The entire Pascagoula River basin would suffer as water levels drop and salt water from the Mississippi Sound moves further up the river.

The toxic salty waste would then be pumped 100 miles across 56 bodies of fresh water to the Gulf of Mexico and dumped near the barrier islands. To understand the threat, dissolve 11 pounds of salt in a 5-gallon bucket of fresh water. Keep stirring until you can dissolve no more salt. Now, dump that bucket of salt water onto your garden. Of course you wouldn't do this, but that is exactly what DOE wants to do to our coastal waters—10 million 5-gallon buckets every day.

Communities on the coast depend on wells for their drinking water supplies. The underground aquifer that feeds our wells is replenished by surface water between the coast and Hattiesburg. How would the aquifer be affected by removing 50 million gallons of water from the Pascagoula River each day?

DOE predicts a minimum of 56 brine spills from a 100-mile Richton brine disposal pipeline. At the existing SPR sites DOE records list 227 spills in a 20 year period that released 64,014,000 gallons of toxic waste. The average spill was 282,000 gallons. Yet, DOE says that salt waste spills would not cause damage to the Pascagoula River and the adjoining woods and farmland.

In order to remove oxygen from the brine waste to protect the pipelines from rust, DOE would add 360 gallons of ammonium bisulfite each day. Ammonium bisulfite is listed as a hazardous chemical by the U.S. Occupational Safety and Hazard Administration. The U.S. Coast Guard classifies it as a marine pollutant. DOE plans to dump this toxic chemical into our coastal waters with the brine waste.

Currents, tides and ship traffic would allow brine waste into the Mississippi Sound, the largest estuary on our coast. Remarkably, DOE did not consider tides or winds in the initial Environmental Impact Statement and we have yet to get information on the Supplemental EIS.

Our barrier island passes are key corridors for the larvae and post larvae of economically important fish and shellfish to move between the gulf and Mississippi Sound. These fragile young organisms may not survive the "brine barrier" created by the salt waste. Local experts in marine life and the seafood industry are deeply alarmed. But DOE has not considered the problem. They have not contacted the Gulf Coast Research Laboratory (GCRL) or other local experts who volunteered their expertise when these and other problems were brought to DOE's attention during the public meetings in April 2008.

The Pascagoula River was listed this year as America's ninth most endangered river. The proposed water withdrawal would take place in critical habitat for endangered and threatened species.

To recap the environmental concerns, approximately 80 billion gallons of low oxygen, toxic, salt brine waste (roughly 10 times the average salinity of the gulf waters) would be dumped into the gulf, only 4 miles south of Horn Island Pass and directly in line with the Pascagoula Ship Channel. The loss of fresh river water would threaten our drinking water supplies and harm the river system. The pipeline would leak brine into the Pascagoula River and the woods and farmland. The salt waste would create a dead zone in our coastal waters and degrade fisheries, destroy critical habitat, and pollute important waters necessary for the growth of juvenile fish and shellfish.

THE RICHTON SALT DOME SPR—AN ECONOMIC BOONDOGGLE

Currently, the existing SPR sites are 92 percent full. Oil from the SPR has been used only twice during its 20-year history:

—After Hurricane Katrina shut down 25 percent of the domestic supply of petroleum, the United States used only 1.5 percent of the SPR.

—During the first gulf war only 2 percent of the SPR was used.

DOE says that the project would create only 10 to 20 permanent jobs on the coast and only 100 in Richton after construction is completed. Degrading our river and gulf ecosystems for such a small number of permanent jobs is a catastrophe and a disgrace. Worse, DOE failed to consider the loss of existing jobs. Apparently, DOE does not value our local industrial workers and fishermen. And what about the coast's growing tourism industry?

DOE says that the proposed tank farm site and deep water dock required by the project would create only 10 to 20 new jobs while consuming up to 49 acres of prime industrial land in the Pascagoula Port. Current industrial uses of land in the port provide far more jobs per acre. A 49-acre site should produce more than 500 jobs. Do we want to lose 450 future jobs on the coast?

Private landowners who sell their property for the storage site in Richton and pipeline rights-of-way are the big beneficiaries of this expensive publicly funded project. There is very little public benefit. Even DOE acknowledges that their contractors would use "in-migrating" workers for this work instead of local Mississippi residents.

Based on the cost of oil at about \$70/bbl, the Richton project would cost approximately \$11 billion for just 18 days worth of oil. There are far better ways for America to spend \$11 billion. Instead of buying a hole in the ground, America should invest in increased efficiency and renewable energy systems that would give our children cleaner water, better jobs, and a more secure nation.

The withdrawal of 50 million gallons of water per day for 5 to 6 years from the Pascagoula River could jeopardize Jackson County's ability to supply cooling water to existing and future industries. As a recent example, look at the building moratoriums and economic disruptions in Georgia as a result of overuse of the Chattahoochee River.

THE RICHTON SPR EXPANSION SITE—ANOTHER EXAMPLE OF FAT CATS AND WASHINGTON DUMPING ON MISSISSIPPI

DOE announced the Richton SPR project 3 days after Katrina struck. Within 4 months after Katrina public hearings were completed in Jackson. No meetings were held on the coast. Virtually no one from the coast knew of the plan; most coast citizens were still concerned with immediate recovery needs.

DOE dodged and ignored public input. Rather than rely on the local experts at the Gulf Coast Research Laboratory, they hired a Washington contractor to conduct the entire evaluation of the project's effects on the coast. None of the project team has ever been on the Pascagoula River, the Mississippi or the Gulf of Mexico in Mississippi.

A citizen outcry in 2008 prompted public meetings finally won coast residents an opportunity to participate. More than 400 people attended, including businessmen, scientists, and fishermen. They detailed the proposed project's many problems, they offered a wealth of information, and volunteered their help. Now, a year later, DOE has released the supplemental study and still have not bothered to talk to GCRL and other local experts who know the river and the coastal waters.

Again, I urge the Senate Committee on Appropriations Subcommittee on Energy and Water Development to keep funding for the proposed Richton Salt Dome SPR out of the Federal budget. These are tough economic times for everyone and we do not need our Government to spend any more resources on DOE's proposed project. Thank you for your consideration.

PREPARED STATEMENT OF JULIA O'NEAL

U.S. DEPARTMENT OF ENERGY STRATEGIC PETROLEUM RESERVES RICHTON SALT DOME PROJECT

I strongly support the cancellation of all previous funding for the Richton project in the President's fiscal year 2011 budget request for the Department of Energy (DOE) and urge the Senate Committee on Appropriations Subcommittee on Energy and Water Development and its members to support this portion of the proposed budget.

Along with many others, particularly the Gulf Conservation Coalition and the Gulf Restoration Network, I herewith voice my objections to the DOE's choosing the most expensive site for the expansion of the SPR (the next most expensive, Big Hill, Texas, was less about 15 percent of the cost of Richton, largely because of the 330 miles of pipeline required in Mississippi); the fact that the Environmental Impact Statement (EIS) has not been finalized per NEPA requirements; and the extensive water pollution and environmental destruction the Richton Salt Dome Project would create.

Others have done an excellent job on the cost and detailed comments on the EIS. I would like to highlight the politics of this project. Our family farm is about 30 miles north of Biloxi. Katrina was a big setback for this area, which has always been poor anyway. The coming of the casinos to the Mississippi gulf coast made a big economic change there, but the isolated, uneducated culture persists only a few miles inland. Because developers never were interested in South Mississippi, much of it remains in its natural state—natural, that is, post the massive harvest of the longleaf pine at the turn of the last century. Most people have no idea what a gem we have in, for instance, the largest unregulated river system in the lower 48, the Pascagoula River. People are just beginning to tap the potential for ecotourism in an area that hosts an annual abundance of neotropical migrating birds, clear sandy streams and creeks, and lots of native flora and fauna.

Mississippi's Governor at the time of Katrina, Haley Barbour, was a significant actor in Cheney's Energy Task Force—known to have recommended (on behalf of his lobbying client, the Southern Company) that George W. Bush renege on his campaign promise to cut emissions (http://www.sourcewatch.org/index.php?title=Haley_Barbour). Just weeks before Katrina, the Sierra Club released a film connecting the Energy Task Force to Barbour's attempt to open up the inner Mississippi gulf coast at the barrier islands to oil and gas drilling (<http://www.sierraclub.org/tv/episode-storm.asp>, see Episode 6, "Storm in the Gulf"). Katrina taught us, again, how much we need those undisturbed barrier islands.

Barbour had more Energy Task Force business to conduct. Some little-noticed Federal legislation sponsored by then-Representative Chip Pickering only allowed DOE to look at previously considered sites, or those nominated by a Governor, for expanding the SPR (the Pickering Strategic Petroleum Reserve Amendment to the Energy Policy Act of 2005). Then, on October 18, 2005, just weeks after Katrina, public scoping meetings for expansion of the SPR were held in Jackson. Jackson oilman Julius Ridgeway, who had contributed \$70,000 to the Republican Party, testified that his family owned 75 percent of the salt and storage rights under the dome (http://www.fossil.energy.gov/programs/reserves/spr/jackson_meeting_transcript.pdf). Ridgeway announced his "cooperation and support" and Pickering called it "the largest Federal construction project in Mississippi history." In 2006, Barbour contacted Energy Secretary Samuel Bodman and Deputy Secretary Clay Ball offering two sites for the SPR (U.S. Department of Energy Executive Secretariat Correspondence Control). In the same year, Bodman's former chief of staff, Eric Burgeson, joined Barbour's lobbying firm (<http://www.muckety.com/Eric-Robert-Burgeson/11067.muckety>). On February 14, 2007, Bodman announced Richton would be the site of the new SPR facility.

None of this is illegal of course. But such conflict of interest does not serve the American taxpayers' best interests.

The part of the State that would be most affected by this project was otherwise engaged on October 18, 2005. We were looking for water, gas, food and shelter, and trying to get out from under massive fallen trees. (See the second paragraph of Ronnie Blackwell's 2007 column for our confusion about the local SPR site-choice process: <http://ronnieblackwell.com/WordPress/?p=71>).

The EIS, which cost the DOE \$3.7 million, was conducted by ICF International, the firm that incompetently conducted the "Road Home" program in Louisiana after Katrina. I have seen (and can produce on request) an e-mail to David Johnson at the DOE from Ian Frost, a consultant for ICFI, dated June 6, 2007, that discusses a U.S. Fish and Wildlife Service request for an additional U.S. Geological Survey

study relative to water flow. The e-mail suggests that the consultants are more interested in helping DOE get the project built than doing a thorough EIS.

The Richton Salt Dome project aims to pump 50 million gallons of water per day out of the Pascagoula and Leaf Rivers. The water will be pumped (using lots and lots of fossil fuel) into a land formation called the Richton Salt Dome. Instead of mining the salt and selling it to the people up north who say they need it for de-icing roads, the salt will be mixed with perfectly clean, even potable, water, and pumped through the salt dome. Then the highly salted water (“brine”) will be pumped into the Gulf of Mexico (using lots more fossil fuel for that pump job), where the excess salt in the water will do in marine life, including the endangered Gulf Sturgeon. The brine should pretty much end oysters, shrimp and fishing in the Mississippi Sound. Any aquatic species, plant or fish or mammal, which depends on the brackish combination of fresh and salt water will be destroyed. The Salt Dome project will deliberately turn pristine water into brine and create a Dead Zone in the gulf where it is dumped.

Meanwhile, about 2 years ago, not-so-far-away Tampa completed a \$150 million desalination plant. They need fresh water; we apparently don’t.

Three years after the rushed meeting in Jackson, about which we knew little, the DOE had a final EIS. We on the coast were dumbstruck, and our Representative, Gene Taylor, insisted that public hearings be conducted in the area that would be affected, which had never taken place previously (<http://www.gulfcoastnews.com/GCNnewsRichtonSaltDomeHearingsTaylor012408.htm>). So the DOE condescendingly scheduled three “open meetings” (<http://gulfconservationcoalition.com/docs/USDOE.SUP.EIS.Meeting.Notice.PDF>).

And what do we U.S. citizens get for our \$3.5–\$4 billion? We will have 160 million gallons of unrefined oil, supposedly enough to run the United States for 2 weeks. Here’s what has to be built just to deliver the crude to the Chevron refinery: http://fossil.energy.gov/programs/reserves/spr/Richton_WebSite_Fact_Sheet.pdf. You can almost hear the simple slide presentation, but behind it lie a lot of dead birds and fish. And note that one-half the oil goes to a Naval Station, not to civilians or businesses.

What about the environmental consequences? Well, the DOE has studied them carefully: http://www.fossil.energy.gov/programs/reserves/publications/Pubs-SPR/2006_SPR_EIS.html.

Click on chapter 3, section 3.6, “Water Resources.” Richton surface water analysis begins on p. 3–130. There are four pages of tables describing the impact on creeks and streams—generally the same phrase “Impaired use for aquatic life support.” Originally, I thought “N/A” in the tables must mean “not affected.” Nope: “not available.” They didn’t bother. For most of the surface water in the vicinity of Richton, the impact of the salt dome project is “impaired” or “not available.” It is hard for me to believe that the impairment extends so far upstream into tributaries . . . even to Black Creek, a U.S. Fish and Wildlife Service designated “Wild and Scenic River.”

After 2 weeks, then what? No water, no fish, no birds, and, presumably, the emergency oil supply is gone. Why not just spend the \$3.5 billion this project will cost on solar panels for American homes? At least they would last longer than 2 weeks—and a little fan, a little light, a few communication devices like TV or radio or Internet, all that means a lot in an emergency. We know. We lived through Katrina, and everything was not OK after 2 weeks.

Despite promises, we never saw any revisions to the EIS based on our many comments in 2008. To our knowledge, no scientists we recommended were consulted. The hearings were meant to placate the public, not to listen.

At a time when no one seriously questions that burning fossil fuels is changing our climate far more rapidly than we can control, our Government can’t seem to get off the teat. First we dig up the oil, then we dig another hole and put it back in the ground. It’s stupid, dirty, and dangerous to the water we need.

PREPARED STATEMENT OF THE COALITION OF NORTHEASTERN GOVERNORS

The Coalition of Northeastern Governors (CONEG) is pleased to provide this testimony to the Senate Committee on Appropriations Subcommittee on Energy and Water Development regarding fiscal year 2011 appropriations for the U.S. Department of Energy (DOE). The CONEG Governors request funding for the following Energy Efficiency and Renewable Energy Programs: \$300 million for the Weatherization Assistance Program and \$30 million for the Innovation in Weatherization Program, at least \$75 million in the base appropriations for the State Energy Program, and \$230 million for the Building Technologies Program. In addition, the Gov-

ernors request at least \$129 million for the Energy Information Administration, and sufficient funding for maintenance and operation of the Northeast Home Heating Oil Reserve. The Governors support the President's request for increased funding of solar energy, wind energy and electricity reliability programs; and also urge the committee to ensure that, through the U.S. Department of Energy, \$7.5 million is provided to maintain the critical networks and market development work of the National Biomass Partnership (previously known as the Regional Biomass Energy Program).

The Governors recognize the daunting fiscal challenges facing the subcommittee this year, and thank you for your past support for these vital programs. Continued investment in these very successful energy programs is a crucial step toward achieving the Nation's energy security, economic and environmental goals.

WEATHERIZATION ASSISTANCE AND STATE ENERGY PROGRAMS

The Nation's current economic situation has placed a new emphasis on the benefits of the Weatherization Assistance Program (WAP) and the State Energy Program (SEP). Working with all 50 States, the District of Columbia and U.S. Territories, these successful programs allow States to quickly and efficiently implement energy saving technologies and practices, creating green jobs and achieving real savings for families struggling with unaffordable home energy costs. The Governors thank the subcommittee for providing substantial funding for these crucial programs in the American Recovery and Reinvestment Act (ARRA). While there have been some challenges at the State and Federal level in ramping-up these programs and meeting new ARRA program requirements, States and the Federal Government have worked together to find effective solutions. More than one-half of the SEP funds (over \$1.8 billion) are committed, and spending of WAP funds is accelerating rapidly and on target to reach the goal of weatherizing 600,000 homes by March 2012. Continued base funding is needed in fiscal year 2011 to help sustain valuable green jobs and to realize and effectively assess the continuing energy and environmental benefits of these programs.

Weatherization Assistance Program.—The CONEG Governors request \$300 million in fiscal year 2011 for the WAP, plus \$30 million for continuation of the Innovation in Weatherization program. Weatherization is an immediate and effective tool to manage the energy use of low-income households. The need continues to be great. Forty-nine percent of these households are occupied by the elderly or disabled; and these households can spend as much as 20 percent of their annual income on home energy bills compared to just 3 percent by other households. Since its inception in 1976, WAP has weatherized more than 6.25 million low-income residences across the country. In addition to the stimulus funds, the program uses nearly \$1 billion in Federal, State, local, utility, and private funds to reach more than 150,000 homes each year.

Through a State-managed network of more than 900 local weatherization providers, WAP increases residential energy efficiency. The program, which provides specialized training and career development, creates a workforce trained in the most advanced assessment and installation techniques. Weatherization service providers perform comprehensive computerized energy audits of each home, and provide a package of efficiency measures tailored to the individual needs of each household.

Many of these weatherization measures include inexpensive, yet effective upgrades such as installing insulation; sealing ducts; and tuning and repairing heating and cooling systems. In addition, the program uses a "whole house" approach, incorporating advanced technologies to address comprehensive energy usage in low-income homes, as well as related health and safety improvements. DOE estimates that the program returns \$1.67 in energy-related benefits for every \$1 invested.

This successful public-private partnership creates considerable investments in local economies across the country; provides continued professional development for workers; and contributes to increased home values, and the health and safety of the Nation's most vulnerable citizens. The program yields benefits that are far-reaching and long-lasting.

The goal of the complementary Innovation in Weatherization program is to demonstrate new ways to weatherize low-income homes while lowering the Federal cost for residential energy retrofits. Through partnerships with organizations such as non-profits, labor unions, and private contractors, the program strives to obtain \$3 in non-Federal contributions for every \$1 invested by DOE.

State Energy Program.—The CONEG Governors request at least \$75 million in the base appropriations for the SEP in fiscal year 2011. Ensuring this base funding level is critical for the SEP to continue as the nationwide cornerstone of the State-Federal-private partnership for many energy efficiency and conservation programs.

Especially for the smaller States, the base SEP program allows them to dramatically expand program delivery and leverage non-Federal resources with Federal funds. SEP is vital to achieving energy efficiency and conservation in energy end-use sectors such as buildings, industrial, agriculture, transportation, and power generation. The program, which has a proven track record of effectiveness, assists States' initiatives that help realize national goals of greater energy efficiency; reduced energy costs; development of alternative and renewable energy resources; and reduced reliance on imported sources of energy. The SEP also helps States in their critical emergency preparedness activities, improving the security and reliability of energy infrastructure, and preparing for natural disasters.

SEP funding provides States with the flexibility to tailor their renewable energy and energy efficiency programs to maximize the effectiveness of the program's resources. The Northeast States have used SEP funds to support projects to update emergency plans to anticipate and respond to potential shortages of electric power, natural gas and deliverable fuels. SEP funds have also been used by State agencies to assist in reducing energy use in commercial and institutional buildings, fleets, and equipment; perform small business energy audits; and provide public information and education to local residents, small businesses, farmers, and others to make them aware of opportunities to reduce energy consumption and energy bills.

The modest (non-ARRA) Federal funds provided to the SEP are an efficient and effective Federal investment, yielding substantial and extensive energy and economic benefits. States can ensure that the energy improvements are delivered, since most SEP work is undertaken through leveraged agreements and reimbursable contracts. According to the most recent Oak Ridge National Laboratory study, \$1 in SEP funding yields: \$7.22 in annual energy cost savings; \$10.71 in leveraged funding; annual energy savings of 47,593,409 million source BTUs; and annual cost savings of more than \$333 million. The environmental benefits are equally as impressive resulting in an annual reduction of carbon emissions of 826 million metric tons—the same amount produced by 582,000 automobiles in a single year.

BUILDING TECHNOLOGIES

The CONEG Governors request \$230 million in fiscal year 2011 for the Building Technologies Program (BTP). The program has created unique and effective partnerships with States, industry, national laboratories, universities and manufacturers to improve the energy efficiency of new and existing buildings, and the equipment and systems within them.

According to the Department of Energy, buildings account for more than 70 percent of the electric energy consumed in the United States and are responsible for 38 percent of total U.S. carbon dioxide emissions. With roughly 15 million new buildings projected to be built by 2015, a tremendous opportunity exists for the development and deployment of energy efficient technologies and building practices. The potential environmental benefits and energy and cost savings are significant.

BTP develops and promotes deployment of technologies to make new and existing homes and buildings less energy intensive. One of the strategic goals of BTP is to create net zero energy buildings that, through a combination of on-site renewable energy and increased efficiency, can generate an equal or greater amount of energy than they consume from the grid. The program pursues this goal through complementary activities that include R&D; development and improvement of equipment standards and analysis; and introduction of new advanced technologies and the widespread use of highly efficient technologies already in the market.

BTP also collaborates with other DOE programs as well as partners of the highly successful ENERGY STAR program to increase awareness, availability and purchase of energy efficient appliances, lighting and windows. According to DOE, in 2006, ENERGY STAR saved 170 billion kilowatt hours—or almost 5 percent of the total 2006 electricity demand—and helped avoid greenhouse gas emissions equivalent to those from 25 million automobiles.

ENERGY INFORMATION ADMINISTRATION

The Governors support fiscal year 2011 funding for the Energy Information Administration (EIA) at least at the level of \$129 million. EIA is the Nation's foremost source of reliable independent information, analyses and forecasts on the energy produced, imported and consumed in the United States. As Congress and the administration continue to develop and debate critical energy and environmental strategies, EIA is increasingly and consistently called upon to provide unbiased, timely and reliable information. In addition, States rely on EIA data as the core of their information for energy emergency planning. New requirements included in the Energy Independence and Security Act of 2007, as well as the evaluation of an increas-

ingly more complex and interdependent energy industry has created a vastly increased workload for EIA and the need for more rigorous data collection and analysis.

A modest increase in funding in fiscal year 2011 will help ensure that EIA can continue to provide the most accurate and reliable information on the energy markets and industry.

NORTHEAST HOME HEATING OIL RESERVE

The CONEG Governors request sufficient fiscal year 2011 funding for maintenance and operation of the Northeast Home Heating Oil Reserve. The Nation's heightened emphasis on energy reliability and security places renewed importance on the Reserve.

Almost 70 percent of the 7.7 million households heating primarily with home heating oil are in the Northeast, making the region particularly vulnerable to the effects of supply disruptions and price volatility. The Northeast region is literally at the end of the energy product pipeline. Any disruption along the delivery infrastructure anywhere in the country negatively impacts the Northeast. The Reserve is strategically placed in ports along the northeast coast to respond rapidly and efficiently to any emergency supply interruption. The Reserve is designed to provide an emergency supplemental supply over a 10 day delivery period—the time required for ships to carry heating oil from the Gulf of Mexico to New York Harbor—in the event of a supply disruption or shortage in the Northeast. Adequate funding will ensure the Reserve is maintained in a high state of readiness and capable of completing an immediate drawdown if needed.

RENEWABLE AND RELIABLE ENERGY

Renewable, reliable energy contributes to the achievement of multiple regional and national goals, including lowering greenhouse gas emissions, increasing and diversifying domestic energy supply, creating new jobs, and enhancing the Nation's energy security. A strong Federal partner and consistent and sustained funding for solar energy, wind energy and electricity reliability programs are essential. Therefore, the Governors support the President's request for increased funding for these important programs.

The Governors also request that the subcommittee ensure that, through the U.S. Department of Energy, \$7.5 million is provided to maintain the critical networks and market development work of the National Biomass Partnership (previously known as the Regional Biomass Energy Program). The Partnership, a collaboration of five regional biomass energy programs created by Congress, is a critical link in the chain of research, resource production and technology commercialization that is essential to bringing bioenergy technologies successfully into the marketplace.

The States contribute significant resources to support the development of biomass fuels, technology, and infrastructure. The Partnership has demonstrated its ability to expedite deployment of the biomass fuels, technology, and infrastructure that is necessary to reach common goals of States and the Federal Government. In the Northeast alone, the Northeast Regional Biomass Program (NRBP) directly influenced \$24 million in biomass investments—69 percent of the overall biomass investment made in the region in 2003. Working with State, Federal and private sector officials, the NRBP has provided bioenergy education and training to nearly 3,000 people in the region and contributed to State-developed bioenergy policies and programs. However, the absence of a strong Federal partner threatens this State-private sector effort to better coordinate the institutional and physical infrastructure for deployment of sustainable biomass fuels and bioenergy technologies.

In conclusion, the Coalition of Northeastern Governors (CONEG) request that you provide \$300 million for the Weatherization Assistance Program and \$30 million for the Innovation in Weatherization Program, at least \$75 million in the base appropriations for the State Energy Program, \$230 million for the Building Technologies Program, at least \$129 million for the Energy Information Administration, and \$7.5 million for the work of the National Biomass Partnership. In addition, the Governors support the President's request for increased funding of solar energy, wind energy and electricity reliability programs, and sufficient funding for maintenance and operation of the Northeast Home Heating Oil Reserve.

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 2011 appropriation for the Department of Energy (DOE)

science programs. The ASM is the largest single life science organization in the world with more than 40,000 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.

The ASM supports the administration's fiscal year 2011 budget of \$5.1 billion for the DOE Office of Science, a 4.4 percent increase from fiscal year 2010. The ASM endorses the administration's pledge to double funding for the DOE Office of Science by fiscal year 2017. The Office of Science funds intramural and extramural research that might not be undertaken otherwise due to its complexity or cutting edge and theoretical nature. However, such research leads to the technological innovations needed to enhance our economy, our workforce, and our environment.

The DOE's Office of Science is the largest sponsor of basic research for the physical sciences in the United States, and also supports substantial life sciences research. It supports more than 7,000 individual research projects at more than 300 academic institutions, and 10 DOE national laboratories. It also provides access to leading edge research facilities for extramural investigators, including an estimated 26,000 that will use these facilities in fiscal year 2011.

BIOLOGICAL AND ENVIRONMENTAL RESEARCH (BER)

The Office of Biological and Environmental Research, within the DOE Office of Science, oversees research and facilities that support DOE's energy, environment, and basic research missions. BER sponsored research provides the foundational science underpinning DOE's goals for development of clean bioenergy sources, remediation and long term stewardship of legacy environmental contamination and understanding the impacts of climate change on Earth's ecosystems.

BER programs enable solutions for some of the Nation's most difficult energy related and environmental challenges by advancing our basic understanding of climate change, biofuels, carbon sequestration, remediation of subsurface contaminants, and interactions of biological and physical systems. Wide ranging studies of microbes are central to all of these efforts and include pioneering studies of the genetic potential of individual organisms and microbial communities in complex environments, as well development of new bioinformatics tools for effectively managing and utilizing large datasets to advance genome enabled scientific research.

GENOMIC SCIENCE

The BER Genomic Science program (formerly Genomics: GTL) accelerates the development of practical solutions to energy and environmental problems by understanding the integrated biological systems of microbes and plants that govern their structure and function. This program uses high throughput genome sequencing and cutting-edge systems biology research techniques to understand key biological processes, ranging from molecular-scale networks of single cells to community scale interactions of ecosystems. In addition to directly supporting DOE mission driven research efforts at academic institutions and DOE national laboratories, publicly accessible genomic and metagenomic sequence data produced by DOE facilities encourage and support innovation while helping to solve environmental problems and energize commercial biotechnology in the United States. Addressing complex environmental and energy problems requires innovative, cross cutting research. The Genomic Science program supports a wide range of interdisciplinary research efforts with a strong microbiological component. For example, a recent program, "Biological Systems Research on the Role of Microbial Communities in Carbon Cycling" seeks to develop new integrated research efforts in genome enabled systems biology, environmental microbiology, and modeling of biogeochemical processes aimed at understanding how shifts in environmental variables impact microbially mediated carbon cycling. Gaining better quantitative knowledge of these processes is critical for predicting the storage or release of carbon from ecosystems and potential levels of CO₂, methane, and other atmospheric greenhouse gases.

JOINT GENOME INSTITUTE (JGI)

BER funding supports the DOE Joint Genome Institute (JGI), which has sequenced over 450 microbial genomes, more than 200 "metagenomes" of microbial communities, and 25 plant genomes with energy and environmental significance. The JGI provides access for external researchers to its state of the art sequencing and bioinformatic capabilities. Current sequencing capacity (about four tera-base pairs per year) is continually expanding with advances in sequencing technology and computing. JGI researchers generate results that push the boundaries of genomics, sequencing organisms that degrade cellulose, capture carbon, and transform envi-

ronmental contaminants. Their discoveries help stakeholders make decisions about the selection of new bioenergy crops and cost effective bioenergy production.

BIOENERGY RESEARCH CENTERS

BER supports three DOE Bioenergy Research Centers (BRCs, established in 2007) tasked with developing innovative strategies for biofuels production. When created, the multidisciplinary Centers brought together teams of researchers from 18 of the Nation's leading universities, 7 DOE national laboratories, 1 nonprofit organization, and a range of private companies. Their mission is to perform fundamental research addressing barriers to economic production of energy from cellulosic biomass, and drastically to reduce the Nation's consumption of fossil fuels. Goals include identification of next generation bioenergy crops, discovery of enzymes and microbes that degrade biomass, and creation of microbe-mediated models of fuel production of bioethanol and other biofuels. Each center applies cutting edge technologies and research methods for a wide range of biomass sources while managing massive data sets in the search for tomorrow's clean energy.

Headquartered at DOE's Oak Ridge National Laboratory, the University of Wisconsin-Madison, and DOE's Lawrence Berkeley National Laboratory, the three BRCs are investigating microbial processes that can convert diverse crops, such as switchgrass and poplar, into usable fuels. Specific examples include the BioEnergy Science Center's approaches for screening samples from natural thermal springs to identify enzymes and microbes that effectively transform biomass at high temperatures, and to genetically engineer a lignocellulose degrading microbe for ethanol production. Researchers at the Great Lakes Bioenergy Research Center are developing more refined metabolic models of in microbes to enable design of metabolic engineering strategies for enhanced biofuel production. The Joint BioEnergy Institute is pursuing synthetic biology research on microbial synthesis of a variety of hydrocarbon compounds with higher energy content than ethanol and better compatibility with existing fuel distribution infrastructure.

BASIC ENERGY SCIENCES (BES)

The Office of BES, administered within the Office of Science, supports fundamental research to understand, predict, and control matter and energy at electronic, atomic, and molecular levels, thus providing the foundations for new energy technologies and supporting DOE missions in energy, environment, and national security. The portfolio supports work in the natural sciences, emphasizing fundamental research in materials sciences, chemistry, geosciences, and aspects of biosciences. BES also operates sophisticated state of the art equipment and facilities open to investigators from private institutions, universities, and national laboratories. Research highlights include determination of the structure and organization of the highly efficient light harvesting complex in green sulfur bacteria, elucidation of protein synthesis mechanisms by methane producing bacteria, characterization of critical components of algal light harvesting complexes, and determination of the biosynthetic pathway for methane production from CO₂ and hydrogen.

In 2009, BES Energy Biosciences evolved into two complementary and synergistic programs, Photosynthetic Systems and Physical Biosciences. Both programs support unique areas of fundamental research on plant and non-medical microbial systems.

PHOTOSYNTHETIC SYSTEMS

The BES Photosynthetic Systems program supports fundamental research on the biological conversion of solar energy to chemically stored forms of energy, bringing together biology, biochemistry, chemistry, and biophysics approaches to study natural photosynthesis and related processes. Advances in genomics technologies such as metabolomics along with increased availability of plant genomic sequences are also providing new opportunities to leverage the strengths of the Photosynthetic Systems program in molecular biology and biochemistry with powerful capabilities in imaging and computation. Example topics include light harvesting, exciton transfer, charge separation, transfer of reductant to carbon dioxide, and the biochemistry of carbon fixation and carbon storage. Emphasized areas are those involving strong intersections between biological sciences and energy-relevant chemical sciences and physics, such as in self assembly of nanoscale components, efficient photon capture and charge separation, predictive design of catalysts, and self-regulating/repairing systems. The program aims to provide a critical scientific knowledge base that can inspire the roadmap for artificial photosynthesis and enable new strategies and technologies for more efficient generation of biomass as a renewal energy source.

PHYSICAL BIOSCIENCES

The BES Physical Biosciences program combines experimental and computational tools from the physical sciences with biochemistry and molecular biology. The goal is increased fundamental understanding of the complex processes that convert and store energy in plants and non medical microbes, including archaea. Examples of research supported by this program include studies that investigate the mechanisms by which energy transduction systems are assembled and maintained, the processes that regulate energy relevant chemical reactions within the cell, the underlying biochemical and biophysical principles determining the architecture of biopolymers and the plant cell wall, and active site protein chemistry that provides a basis for highly selective and efficient bioinspired catalysts. Combined with efforts in molecular biology and biochemistry, increased use of physical science and computational tools (ultrafast laser spectroscopy, current and future x-ray light sources, quantum chemistry) to probe spatial and temporal properties will give us an unprecedented architectural and mechanistic understanding of biological systems and allow the incorporation of identified principles into the design of bio-inspired synthetic or semi-synthetic energy systems.

EPSCoR

The BES administered Experimental Program to Stimulate Competitive Research (EPSCoR) also supports a significant sector of the Nation's energy research, distributing university grants in a number of States across the country. EPSCoR's interdisciplinary program areas include, among many others: biological and environmental science, advanced computer science, renewable energy science, climate change, genomics, and science education. EPSCoR has traditionally provided academic incubators for innovation and economic recovery.

RESEARCH INFRASTRUCTURE AND THE NATION'S WORKFORCE

More than 30,000 scientists and engineers work at DOE laboratories and technology centers, but many more are supported through grants and fellowships, or the use of cutting edge facilities and equipment that often are one of a kind. An example was last September's announcement of up to \$12.5 million in Recovery Act funding for at least 80 graduate fellowships to U.S. students pursuing advanced STEM-related degrees, through the Office of Science's new Graduate Fellowship program.

DOE's Office of Science has also initiated an Early Career Research Program, designed to bolster the Nation's scientific workforce by providing support to exceptional researchers during the crucial early career years when many scientists do their most formative work.

Another Office of Science program, Workforce Development for Teachers and Scientists, specifically targets workforce shortages and provides college undergraduates and K-12 teachers with DOE laboratory experiences, designed to attract more young Americans into the STEM workforce.

The Office oversees 10 world class facilities: the Ames, Argonne, Brookhaven, Lawrence Berkeley, Oak Ridge, Pacific Northwest, and Princeton Plasma Physics national laboratories, plus the Fermi, Thomas Jefferson, and SLAC accelerator facilities. These institutions encourage use by outside researchers and students, typically without cost, if results are posted for public knowledge. Each SC facility is an invaluable resource of unique research tools for scientific specialists. The Environmental Molecular Sciences Laboratory at the Pacific Northwest National Laboratory has hosted more than 10,000 scientists from all 50 States and more than 60 countries since its opening in 1997. This year, the DOE will permit extramural use of roughly 1.3 billion supercomputer processor hours at its Argonne and Oak Ridge facilities, awarded to researchers whose projects would be impossible without petascale (quadrillion calculations per second) computing.

CONCLUSION

The ASM supports increased funding for the DOE Office of Science in fiscal year 2011 and urges Congress to fund the Office of Science with at least \$5.1 billion. The diverse Office of Science programs and their successes advance the DOE's strategic mission to sustain the pace of scientific discovery and to educate and train a vital scientific workforce. Global climate change, clean energy, and pristine environments are challenges that demand sustained responses from the United States' science and technology sectors. DOE funded science and engineering are integral to our Nation's search for solutions. The Office of Science leads this effort with notable basic and applied energy research, which often is unique in its complexity, technical requirements, or high risk, high impact design.

The ASM appreciates the opportunity to provide written testimony and would be pleased to assist the subcommittee as it considers the fiscal year 2011 appropriation for the DOE.

PREPARED STATEMENT OF THE ELECTRIC DRIVE TRANSPORTATION ASSOCIATION

The Electric Drive Transportation Association (EDTA) is the cross-industry trade association promoting the advancement of electric drive technology and electrified transportation and we are writing regarding the fiscal year 2011 request for the Department of Energy's 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, security, and environmental benefits of displacing oil with battery electric, hybrid, plug-in hybrid and fuel cell vehicles.

The Nation is moving toward an electrified fleet and the electric drive industry is advancing into the marketplace as rapidly as possible. Electric drive is already in use in passenger cars, commercial trucks, neighborhood electric vehicles, public transport buses, tractors and ground support equipment. As the industry invests in research and development, advanced manufacturing and coordinated deployment initiatives, the Department of Energy's continued commitment to fast-tracking electrified transportation is critical to our success.

We support the fiscal year 2011 budget's focus on advancing electric drive vehicle technologies that will reduce petroleum consumption and air pollutants while increasing energy security and global competitiveness. Like the electric drive industry itself, the Department of Energy is undertaking crosscutting efforts to move electric drive vehicles and infrastructure forward.

In particular, we believe that the requested increases for batteries and electric drive research and development (in a separate Vehicle Technologies program in the fiscal year 2011 request) can accelerate critical cost reduction and performance advancements. The additional efforts funded in the Technology Integration account's Clean Cities program will support the industry's own efforts to expand deployment of electric drive vehicles and recharging infrastructure. Establishment of a batteries and energy storage "innovation hub" in the Office of Science ensure that we continue pushing for the next breakthroughs even as we are moving electric drive vehicles into the market and the mainstream.

In addition to these essential investments, we also see areas in which the budget request misses key opportunities to advance a diverse portfolio of electric drive vehicles. Specifically, the Department of Energy has established a program and a pathway for building U.S. manufacturing capacity for advanced vehicles in the Advanced Technology Vehicle Manufacturing (ATVM) program. Although the program had more applicants establish electric drive manufacturing in the United States than funds, the fiscal year 2011 budget does not request any additional new award resources for the program. Additional funds for the ATVM program will promote industry investment in U.S. manufacturing, speed the vehicles to market and help build the foundation of the green jobs economy.

Another area in which the request is missing an opportunity is in the hydrogen and fuel cell programs, specifically as it relates to development of fuel cell electric vehicles and hydrogen refueling infrastructure. Fuel cell electric vehicles are important electric vehicle options because of their performance in diverse vehicle applications. The industry, working with the Department, has met critical program milestones in reducing cost, enhancing performance and deploying fuel cell electric vehicles for real world use. Looking beyond today's fleet, the National Academy of Science has also emphasized that achieving U.S. energy security and environmental goals will require a portfolio of advanced technology vehicles, which needs to include zero-emission fuel cell options.

The fiscal year 2011 budget request maintains the Department's commitment to hydrogen and fuel cell research, which we appreciate and support. However, at \$37 million below last year's funded level—a 21 percent cut in funding—the commitment is a tepid one. The request would eliminate all fuel cell electric vehicle deployment activities in Technology Validation and "defer" funding for early market development. This short-sighted approach undercuts the industry's own investments, slows momentum to commercialization and will hurt consumer confidence in emerging markets.

We urge you to extend the Technology Validation demonstration for an additional year to provide technology insertion and to ensure that funding for vehicle and infrastructure deployment, market transformation, as well as education and other en-

abling activities, is sufficient to enable the industry to build on technology and market achievements.

As a partner in the effort to establish a secure and sustainable transportation sector, the Department of Energy is accelerating technology breakthroughs, promoting investment in manufacturing capacity and speeding deployment of vehicles and infrastructure. We are pleased that Department's fiscal year 2011 budget builds on its commitment to transportation electrification with increases for vehicles and recharging infrastructure development and deployment. We also respectfully ask that you improve on that effort by supporting advances in the full electric drive portfolio: battery electric, hybrid and fuel cell electric vehicles.

We thank you for your consideration.

PREPARED STATEMENT OF THE NUCLEAR ENERGY INSTITUTE

The Nuclear Energy Institute¹ (NEI) supports fiscal year 2011 funding for the following Department of Energy programs and the Nuclear Regulatory Commission:

- Innovative Technology Loan Guarantee Program—\$38 million for administrative expenses and \$36 billion in new loan guarantee authority for nuclear power projects
- Fuel Cycle Research and Development—\$201 million
- Reactor Concepts Research, Development and Demonstration—\$195 million
- Nuclear Energy Enabling Technologies—\$99.3 million
- Integrated University Program—\$45 million
- Advanced Test Reactor User Facility—\$20 million
- Idaho Facilities Management—\$177.5 million
- Radiological Facilities Management—\$66.8 million
- Environmental cleanup at DOE sites—\$6 billion
- Nuclear Regulatory Commission budget—\$1 billion

America's nuclear energy facilities in 2009 continued a decade of exemplary performance. Nuclear energy continues to surpass all other electricity sources with an industry average capacity factor of 90.5 percent. This reliability enabled the Nation's 104 reactors to produce approximately 800 billion kilowatt-hours of electricity—enough for about 80 million homes—at production costs lower than coal and natural gas-fired power plants. Nuclear power plants in 31 States generate more than 70 percent of the U.S. electricity that comes from carbon-free sources. NEI believes the budget proposed for DOE's Office of Nuclear Energy is indicative of the administration's belief that nuclear energy is essential to America's future electricity supply, energy security and greenhouse gas emission reduction goals.

URANIUM ENRICHMENT D&D FUND TAX UNDUE BURDEN ON UTILITY RATEPAYERS

NEI opposes the proposed \$200 million annual tax on utilities to pay yet again for the decommissioning and decontamination fund at DOE uranium enrichment facilities.

The Obama administration is seeking reinstatement of the uranium enrichment decontamination and decommissioning fund, with a proposed tax on electric utilities of \$200 million a year through 2026. Electric utilities have already paid twice for decommissioning and decontamination at uranium enrichment plants that originally were operated by DOE—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 generated \$2.25 billion, adjusted for inflation. The President's fiscal year 2011 budget would impose the tax yet a third time for cleanup at these sites, representing a new tax on all Americans. This proposal is unnecessary given the Federal fund for this cleanup program has a balance of \$4.6 billion. A proposal to reinstate the fund in the fiscal year 2010 budget was defeated by Congress.

INDUSTRY SUPPORTS \$36 BILLION FOR 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

¹The 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 power plant 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.

facilities. NEI urges the subcommittee to approve the administration's proposal to add \$36 billion in loan volume for nuclear energy plants. The industry has demonstrated the need for this new authority: 10 nuclear power projects reportedly submitted Part II loan guarantee applications representing \$93.2 billion in loan volume. Two uranium enrichment projects submitted applications seeking \$4.8 billion, more than double the available amount.

The loan guarantee program for nuclear energy is self-financing, with project sponsors responsible for underwriting the cost of providing the credit support to the Federal Government. Properly implemented, there will be no cost to the taxpayer. In addition, reducing the cost of capital will reduce project costs and lower electricity prices for all consumers. Southern Co. projects that its \$3.4 billion share of the \$8.3 billion loan guarantee for two reactors at the Vogtle plant in Georgia is expected to save consumers \$15 million to \$20 million in interest costs annually over the life of the loan. The nuclear industry is confident that new nuclear generating capacity will be competitive and is not aware of any credible mainstream analysis that shows otherwise. In last year's National Academies' report, *America's Energy Future*, new nuclear capacity competes well against all other baseload options in a carbon-constrained world.

NEI believes the loan guarantee program's credibility and integrity rest on demonstrable proof that the lender's interest is well-protected. NEI supports rigorous due diligence being conducted by the DOE loan guarantee program office. In addition to legal, financial and market analysis of proposed projects, DOE will use an independent engineer to monitor construction progress and certify that construction is proceeding according to plan before authorizing each month's draw against the guaranteed loan. DOE's due diligence process, together with the fact that new nuclear power plants will be competitive, should ensure that the probability of default—and thus risk to the taxpayer—is extremely low. NEI urges Congress to support DOE's request to fully cover the program's administrative costs in fiscal year 2011, which will result in a net zero appropriation given offsetting collections from loan applicants for nuclear energy projects.

ENSURING ADEQUATE FUNDING FOR THE NUCLEAR REGULATORY COMMISSION

The industry supports fiscal year 2011 funding at the NRC's requested level. However, the industry recommends that NRC appropriately, and more expeditiously, resolve long-standing regulatory issues. The industry applauds the continued oversight of the NRC by Congress to prioritize agency actions. The agency should be more transparent in its budgeting to reveal planned staffing and resource needs by individual divisions. This would demonstrate to Congress, the public and the industry, which pays 90 percent of the NRC's budget, that the budget fairly reflects those activities that should be allocated toward licensee-specific charges rather than general license fees. NEI supports continuation of the Integrated University Program, which includes support for universities and community colleges.

INTEGRATED USED FUEL MANAGEMENT PROGRAM

The administration's decision to withdraw the construction license application for a Federal repository at Yucca Mountain, Nevada is not a repudiation of the Government's obligation under the Nuclear Waste Policy Act to dispose of used nuclear fuel from commercial reactors and defense applications. NEI does not support the termination of the Yucca Mountain repository project. Any effort to shut down the site and remediate it is premature. Numerous State and local governments and the National Association of Regulatory Utility Commissioners are seeking admission to the NRC licensing proceeding to oppose DOE's withdrawal of the application. Several opponents also have brought suit to stop this action. The project should proceed and be funded so that the technical review of the license application is completed. If the NRC licensing proceeding for the project is terminated, it should be done in a manner that would permit it to be restarted. Project records, tests, samples, etc. should be preserved so that they can be used should the project be resumed.

If the Yucca Mountain project is 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. Termination of the Yucca Mountain project does not affect the NRC's pending revision to its "waste confidence" findings nor affect the standard contract for used reactor fuel management between DOE and utilities.

NEI supports the work of the Blue Ribbon Commission on America's Nuclear Future, but recommends that the NRC continue technical review of the Yucca Mountain license application to completion (with the adjudicatory proceeding held in abeyance) to inform the deliberations of the commission. The industry supports a

three-part integrated used fuel management strategy that includes: (1) On-site storage at reactor sites and development of centralized storage at volunteer locations; (2) Research, development and demonstration of advanced fuel cycle technologies; and (3) Development of a permanent repository.

The nuclear industry consistently has supported research and development of the advanced fuel cycle technologies proposed in the Fuel Cycle Research and Development program (\$201 million). DOE's plans should be brought into compliance with any recommendations of the blue ribbon commission that Congress ultimately accepts.

DEVELOPMENT OF ADVANCED REACTOR TECHNOLOGIES

The administration has proposed several new initiatives for the Office of Nuclear Energy for fiscal year 2011. NEI is encouraged by DOE's development of a road map on milestones and annual funding so that Congress and the public will support these new program initiatives. NEI supports \$195 million in funding for the Reactor Concepts Research, Development and Deployment program in fiscal year 2011. Within this program, \$103 million in funding would be allocated for the Next Generation Nuclear Plant (NGNP) program. Westinghouse Electric Co. and General Atomics will begin work on next generation reactor designs after being awarded \$40 million last month by the Department of Energy. Advanced reactor technology can displace the use of fuels such as natural gas for producing process heat, thus enhancing U.S. energy security, stabilizing energy prices and improving the use of finite natural resources.

NEI also recommends \$25.7 million in fiscal year 2011 for the Light Water Reactor Sustainability program, focusing on materials science and materials performance in reactor operations; \$38.8 million for the Small Modular Reactors program with the possibility of additional funds if justified; and \$21.8 million for the continuation of the Generation IV program on advanced reactor concepts. NEI supports \$99.3 million for the new Nuclear Enabling Technologies program, including the Modeling and Simulation Hub as suggested by the administration but recommends DOE seek industry input for program plans as the hub focuses on materials science and improving reactor component manufacturing.

MAINTAIN FUNDING FOR WORKFORCE AND INFRASTRUCTURE

Congress in the last 2 years has approved \$45 million for an Integrated University Program. NEI requests the committee maintain DOE and NRC funding for this program to effectively educate technicians and professionals for careers in all sectors of nuclear science and technology. Additionally, NEI recommends that the subcommittee support \$5 million for the DOE Research Reactor Infrastructure program for new fuel and shipping containers, reactor instrumentation and upgrades, and used fuel services. Industry also supports \$20 million for the Advanced Test Reactor (ATR) National Scientific User Facility at Idaho National Lab as part of the lab's \$177.5 million facilities management budget in fiscal year 2011. This funding supports a vital facility needed to evaluate and improve nuclear fuel and materials behavior and performance for DOE, university and industry projects.

ENVIRONMENTAL CLEAN UP

NEI supports the budget request of \$6 billion for DOE's Environmental Management Office.

PREPARED STATEMENT OF THE ENERGY SCIENCES COALITION

The Energy Sciences Coalition (ESC) strongly supports the administration's goal to double funding for the Department of Energy's (DOE) Office of Science between fiscal year 2007 to fiscal year 2017, a goal that is consistent with the bipartisan American COMPETES Act and the recommendations in the National Academies' 2005 report "Rising Above the Gathering Storm." To that end, the ESC supports funding of at least \$5.121 billion for the Office of Science in fiscal year 2011—an amount equal to the level requested by the administration for fiscal year 2011 and a 4.4 percent increase over fiscal year 2010.

The ESC is aware of the significant fiscal constraints facing the administration and Congress this year. Weighing the economic competitiveness and national security value of investments in Office of Science programs and facilities, however, we believe that funding for the Office of Science of at least the amount included in the budget request can easily be justified. The Office of Science is the Nation's primary sponsor of basic research in the physical sciences, and the facilities and research

it supports are vital to ensuring our energy security and national competitiveness, meeting our environmental challenges, and producing new jobs and innovative technological breakthroughs that will fuel our economy.

Specifically, this funding will:

- Allow the Office of Science to maintain and strengthen DOE’s core research programs at both the DOE national laboratories and at universities;
- Support investigators at more than 300 academic institutions and from all DOE national laboratories;
- Enable support for 27,000 PhDs, postdoctoral associates, and graduate students in fiscal year 2011—approximately 2,000 more than were supported in fiscal year 2010;
- Ensure maximum utilization of DOE research facilities by 26,000 researchers from universities, national laboratories, industry, and international partners; and
- Allow the Office of Science to develop and construct the next-generation facilities necessary to maintain U.S. preeminence in research and development in the physical and biological sciences, computing, and many other critical scientific fields.

The ESC therefore urges Congress to support the administration’s fiscal year 2011 budget request and invest at least \$5.121 billion in the DOE Office of Science.

ENDORING ORGANIZATIONS

American Chemical Society	Rutgers, The State University of New Jersey
American Institute for Medical and Biological Engineering	Semiconductor Industry Association
American Institute of Physics	Semiconductor Research Corporation
American Mathematical Society	Society for Industrial and Applied Mathematics
American Physical Society	Southeastern Universities Research Association
American Society for Engineering Education	Stanford University
American Society for Microbiology	Stony Brook University
American Society of Plant Biologists	Texas A&M University
Arizona State University	Tulane University
ASME	The University of California
Association of American Universities	University of California, Berkeley
Association of Public and Land-grant Universities—APLU	University of California, Davis
ASTRA, The Alliance for Science & Technology Research in America	University of California, Irvine
Battelle	University of California, Los Angeles
Biophysical Society	University of California, Merced
California Institute of Technology	University of California, Riverside
Council of Energy Research and Education Leaders	University of California, San Diego
Duke University	University of California, San Francisco
Florida International University	University of California, Santa Barbara
Georgia Institute of Technology	University of California, Santa Cruz
Harvard University	University of Central Florida
Indiana University	University of Chicago
Jefferson Science Associates, LLC	University of Hawaii System
Krell Institute	University of Illinois
Massachusetts Institute of Technology	University of Maryland
Materials Research Society	University of Massachusetts
Michigan State University	University of Michigan
North Carolina State University	University of Minnesota
The Ohio State University	University of New Mexico
The Optical Society	University of Pittsburgh
Oregon State University	University of Southern California
Princeton University	University of Washington
	University of Wisconsin-Madison
	Vanderbilt University
	Washington State University
	Washington University in St. Louis

PREPARED STATEMENT OF IBACOS, INC.

IBACOS (Integrated Building and Construction Solutions) urges the Subcommittee on Energy and Water Development to provide \$46 million for the Build-

ing America Program at the Department of Energy's (DOE) Office of Building Technologies in fiscal year 2011 Appropriations under the Office of Building Technologies, Residential Building Integration, Energy Efficiency and Renewable Energy. We further urge that the following language is included to ensure that the competitively selected Building America teams are funded at a percentage comparable to their historic funding: Of these funds, \$35 million shall be provided for the research activities of the competitively selected Building America research teams, the Building America lead research laboratory, and other national laboratories conducting research to achieve Building America's specified energy performance targets.

EXECUTIVE SUMMARY

Residential Buildings currently account for over 20 percent of the primary energy consumed by the United States. Since 2000, over 12 million new homes have been constructed, and each year over a million homes are remodeled. Significant energy savings can be achieved at minimal increases in construction costs provided that a long term and consistent commitment is made to work in partnership with the housing industry. DOE's Building America Program has developed an industry-driven research approach to develop solutions that can reduce the average energy use in new housing by 50 percent by 2015, providing significant benefits to homeowners in terms of reduced utility bills and significant benefits to the U.S. economy by maintaining housing as a major source of jobs and economic growth. If building in significant energy savings isn't done now, the Nation risks using an extravagant amount of energy in the future. In order to reduce reliance on foreign energy supplies and to support the stabilization of greenhouse gas emissions, we must invest appropriately in research in the areas of technology, systems integration, and building and renovating processes to upgrade the performance of our housing stock, otherwise, we are mortgaging our future.

Research, development, and outreach activities performed by the competitively selected industry Teams in the Building America Program are the key element in the DOE strategy to reduce energy consumption in residential buildings. The Teams' activities focus on increasing the performance of new and existing homes by developing advanced energy systems that can be implemented on a production basis, while meeting consumer and building performance requirements.

The Teams have been working on improving efficiency in housing since 1992, with successes being embodied in EPA's Energy Star Home program and DOE's Builders Challenge, and they are now focused on the more difficult task of meeting DOE's goals to create strategies to achieve 50 percent whole house savings by 2015, and ultimately Zero Energy Homes (ZEH)—homes that produce as much energy as they use on an annual basis—broad spread in the market by 2025.

A NEW FRONTIER IN RESEARCH—ZERO ENERGY HOMES

The research needed to develop systems and strategies to achieve DOE's short and longer term goals is not simply applying lessons learned; rather, fundamental research is still required. This R&D, performed by the Building America Teams, is truly high-need, high-risk, high-payoff research.

The research required to meet the goals of 50 percent savings and ZEH is costly and high risk:

- Significant basic research is required to develop and integrate new technologies into homes before they are proven effective enough to be applied in the field.
- This research is costly and risky, and will never be undertaken by the industry alone.
- The life cycle of this research is significantly longer than that of comparable industries.
- The homebuilding industry is extremely fragmented, with homebuilders having little ability to drive research, and a significantly lower than average financial commitment to investing in research.
- Builders need successful business models to apply related to effectively and profitably integrating new technologies and strategies.

The research required to meet the goals of 50 percent savings and ZEH is also high-payoff for the following reasons:

- Once constructed, homes have a long lifespan, providing the opportunity for a durable long term reduction in energy use.
- Effective strategies to reduce energy use will positively impact consumers, as well as the Nation's energy demand.

- Successful research into integration strategies will allow new, high-risk technologies to be adopted more quickly and effectively, and can identify code barriers that might prevent energy efficiency and market adoption.

BUILDING AMERICA COMPETITIVE TEAMS: SUCCESSES IN THE REAL WORLD

The work of the Teams allows industry leadership to drive cost effective solutions that move us toward Zero Energy Homes. Building America Builder partners have shown that homes with energy savings up to 40 percent can be cost competitive and valued by consumers in today's marketplace. These homes have lower energy bills and operating costs, and increased building durability as well as occupant safety, health, and comfort. The teams have been instrumental developing cost effective solutions at the 30 percent and 40 percent energy saving levels currently used by regional builders and divisions of national builders such as Pulte Homes, David Weekly Homes, K Hovnanian Homes, Beazer Homes, Centex Homes, Imagine Homes, Ideal Homes, Veridian Homes, Tommy Williams, to name a few. The more than 500 private sector partners who work with the Teams are experts in home construction, building products and supply, architecture, engineering, community planning, and mortgage lending. All construction material and labor costs for homes and communities constructed by Building America Teams' builders are provided by DOE's private sector partners.

In addition to performing the fundamental research needed to advance the energy efficiency of our Nation's housing stock, the Building America Teams also provide recommendations to a broad range of residential deployment partners including the EPA's Energy Star Homes Program, HUD's Partnership for Advancing Technologies in Housing Program, DOE's Builders Challenge, and many industry associations and universities.

DOE's Role in the Residential Buildings Research Partnerships:

- Catalyzing research in residential construction necessary to increase the energy performance, and bringing together industry partners to leverage research dollars and expertise.
- Matching advanced product research programs to the system integration efforts of the Building America Teams to ensure realistic approaches to increasing energy performance.
- Reducing risk and increasing reliability of emerging technologies.
- Providing scientific expertise through the involvement of the National Renewable Energy Laboratory (NREL) and other national laboratories.
- Sharing critical information about research with several thousand associated building industry professionals and leveraging information through EPA, HUD, and private sector energy efficiency programs.

Program Goals:

- Reduce energy use in America's housing stock by 50 percent by 2015 and provide ZEH broad spread in the market by the year 2025, integrating renewable energy when and where practical.
- Research and develop the systems and strategies necessary to allow our Nation to deliver high performance houses in order to increase our national energy security.

Program Status:

Through the competitively selected Teams, Building America works closely with America's lead production builders, who produce approximately 50 percent of the Nation's new housing stock. More than 30,000 homes have been constructed in 34 States with energy savings up to 40 percent. While potentially up to 30 percent of the Nation's builders could reasonably achieve a 30 percent energy saving target, it is estimated that less than 1 percent of the builders can achieve 50 percent. To develop solution sets to help builders move forward to the 50 percent level, all areas of energy use in the house must be addressed. This means increased complexity on the part of the builder and all associated trade partners, suppliers, and manufacturers, which translates to significantly more effort on the part of each Building America Team lead. Increased funding is needed to address DOE's energy efficiency goals, and provide the increased need for technical support to lead builders, contractors, and suppliers for effective research and participation in the program. The Building America research to date has shown that to achieve the 50 percent and ZEH goals, every energy related system in the house must be analyzed and strategies for energy savings developed. This level of effort is significantly greater than for the 30 percent or 40 percent goals, where only major energy end uses in the house needed to be addressed. On a forward moving basis, the stated DOE goals of the program are unreachable without significant Team funding.

Recommendation for Fiscal Year 2011 Funding:

Provide \$46 million, for the Building America Program at the DOE's Office of Building Technologies in fiscal year 2011 appropriations (under the Office of Building Technologies, Residential Building Integration). This does not include new funding to initiate a retrofit research and development program. Additionally, include language as follows to ensure that the competitive teams are funded at a percentage comparable to their historic funding:

“Of these funds, \$35 million shall be provided for the research activities of the competitively selected Building America research teams, the Building America lead research laboratory, and other national laboratories conducting research to achieve Building America's specified energy performance targets”

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 funding priorities for the fiscal year 2011 appropriations budget cycle.

NHA requests a minimum of \$100 million in fiscal year 2011 Energy and Water Appropriations for the Department of Energy's Waterpower Program to support initiatives across all hydropower technology sectors. The types of technologies covered are conventional hydropower including pumped storage and emerging technologies that access the energy in ocean waves, and the flowing water in rivers, man-made channels and those caused by tides.

A \$100 million funding level will go far to support a national goal to double U.S. capacity of renewable hydropower, the research needed to increase production and create 700,000 new industry sector jobs across every State of the country.

Investment in hydropower R&D will drive innovation across the economy and maintain American competitiveness and create jobs. In addition, the Nation's largest and most reliable renewable electricity resource will be positioned to address the multiple challenges of global climate change, increasing demand for clean energy, U.S. energy security and national economic recovery.

HYDROPOWER'S CURRENT AND POTENTIAL CONTRIBUTION

The goal of the National Hydropower Association and its members is to provide clean, climate-friendly, reliable baseload electricity today and in the future through the responsible development and expanded use of conventional hydropower, pumped storage and new technologies, such as ocean and tidal energy and small irrigation power.

As the largest source of renewable electricity in the United States, currently providing 7 percent of U.S. generation and avoiding 225 million metric tons of carbon emissions a year, hydropower is poised to do more. Recent studies demonstrate that the Nation's hydropower capacity could double by 2025 mostly by maximizing existing infrastructure and without the need to build new impoundments.²

The evidence supporting these projections is credible, current and prolific. For example, more than 50,000 MW of new hydropower capacity is in the Federal Energy Regulatory Commission (FERC) pipeline awaiting review and approval for development, with additional projects on the drawing board for consideration.

Second, applications for DOE Waterpower program funding opportunities last year far outnumbered available funds—both for new and conventional technologies. For example, in the most recent funding announcement on November 4, 2009, the Department of Energy awarded \$32 million to 7 projects to pursue upgrades to existing hydropower facilities, although dozens more projects submitted applications.

Finally, new studies project the doubling (or even tripling) of hydropower's capacity by 2025. According to an October 2009 report conducted by Navigant Consulting, approximately 60,000 MW of new hydropower is possible by 2025. This represents enough electricity to power every household in Los Angeles, New York and Chicago. In addition to providing affordable and clean power, the report found that 60,000 MW of new hydropower capacity also will result in 700,000 cumulative direct and indirect American jobs, with an additional 700,000 induced jobs.³

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

¹ NHA is a non-profit, 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 instream hydrokinetic industries and the consumers they serve.

² In fact, of the approximately 80,000 dams in the U.S. only about 3 percent have hydropower facilities associated with them.

³ http://hydro.org/Jobs%20Study/NHA_JobsStudy_Final%20Report_Final_Sept%2020.pdf.

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 research and development investments, where the private sector tends to under-invest.

HYDROPOWER'S R&D NEEDS SPAN ALL INDUSTRY SECTORS—CONVENTIONAL, NEW
HYDROKINETIC TECHNOLOGIES AND PUMPED STORAGE

Although conventional hydropower is one of America's longest serving electric generation resources, the industry is on the vanguard of new technology development and project expansion.

Technology advancements in the industry will allow facilities to add capacity and increase generation reduce impacts on environmental resources, and maximize water use efficiency in a time of increasing and competing needs for water from both power and non-power users.

Maximizing the existing hydropower system, as well as building on existing non-powered dams, are some of the lowest cost options per kilowatt hour for increasing renewable energy generation. However, these projects are also larger, more capital intensive up-front, experience longer development timelines due to licensing, manufacturing and construction, and require Government R&D support to prove out technology advancements to Federal and State resource managers as well as other stakeholders.

For the ocean and tidal energy and instream hydrokinetic industries, the potential resources are tremendous with marine projects that could be sited close to load centers in the Northwest, California, Florida, and the Northeast as well as inland waterway projects that could be sited throughout the country. In addition, hydrokinetics may serve pressing power needs in remote communities as a distributed power resource, such as in Alaska.

The wave, tidal, and instream hydrokinetic industry is making great strides toward commercialization, but still requires significant R&D support to move beyond pilot projects to larger scale deployment, refine the technologies, answer potential environmental impact questions, and reduce higher project costs.

Research and development is also needed to maximize the full potential of hydropower pumped storage projects for use as transmission system tools to provide energy storage, grid reliability and other ancillary services. Pumped storage has the proven ability to provide the firming benefits needed to support the growth of other variable renewable technologies, such as wind and solar.

Federal research, development and deployment programs are critical to bringing these technologies and new projects to fruition and to build the human and technological capital needed to perform breakthrough research and transfer those innovations to the market. As we have testified in the past, NHA analyzed the 2007 EPRI report⁴ and has concluded that it provided a useful model and roadmap from which to guide activities under the DOE Waterpower R&D program. As such, this statement recommends, and incorporates by reference, the suite of initiatives identified in NHA's fiscal year 2010 statement to the House and Senate Appropriations Committees. These directives are intended to address the needs left unfunded by the previous DOE R&D program for hydropower and would expand the Department's efforts.

NHA also encourages Congress and the Department to pursue new horizon initiatives, like climate forecasting and modeling and additional energy/water nexus issues that may affect energy production in the coming years.

Congress has recognized the need for research, development and deployment of new advanced technologies, both for conventional hydropower and the ocean, tidal and instream hydrokinetic industries. NHA directs attention to title IX, section 931 in the Energy Policy Act of 2005 as well as the Energy Independence and Security Act of 2007.

THE IMPORTANCE OF THE DOE WATERPOWER PROGRAM

The Obama administration and the Congress are setting ambitious and aggressive goals for renewable energy development in the United States. Such aggressive goals require aggressive funding for research into renewable energy technology development and assistance in technology deployment.

The Department of Energy is the Government agency charged with meeting these goals and ensuring that cost-effective technologies are brought to market and add

⁴Assessment of Waterpower Potential and Development Needs, Number 1014762, EPRI, March 2007, http://my.epri.com/portal/server.pt?Abstract_id=00000000001014762.

to a diversified energy portfolio and NHA strongly supports their work particularly that of the Waterpower program.

At this critical time when we are relying on our innovate industries to deliver power from renewable resources in an efficient and economical way, we cannot allow initiatives to fall victim to funding setbacks. Throughout the years, the hydropower R&D program has been severely underfunded. This was felt most acutely during the middle of the last decade when the program was zeroed out—the only renewable resource to receive such treatment.

Looking forward, we see the mission of the Waterpower program as one that conducts R&D to improve the technical, societal, and environmental benefits of hydropower and hydrokinetic resources, and that also coordinates with other Federal agencies and industry, including both private and public entities involved with development, is also critical.

One example of the important areas of growth for the hydropower industry is increasing capacity at existing projects operated by the Army Corps of Engineers and the Bureau of Reclamation.

Project developers are reporting a need for better coordination, more resources and process improvements for working with the Federal system. Toward that end, DOE's ability to facilitate communication across the various Government agencies—from the Federal hydropower operators to the Federal Energy Regulatory Commission to the resource protection agencies—is crucial and funding should be directed to support its work in providing information and technical support to assist project development.

CONCLUSION

While funding levels for DOE's Waterpower research and development program have increased from zero funding in fiscal year 2006 to \$50 million in fiscal year 2010, more is required to fully support this important resource.

Under a comprehensive R&D program funded at \$100 million for fiscal year 2011, hydropower will be positioned to offer economic, environmental, and energy benefits simultaneously through comprehensive, well-designed initiatives. Funds are needed to support all technologies through important on-going and new work on resource assessments, advanced hydropower turbine designs, technology testing for new ocean, tidal, and instream hydrokinetic applications, environmental impact studies, climate and hydrology modeling, grid integration and the role of hydro in firming variable energy resources.

By accelerating the funding for the DOE Waterpower R&D program, the United States could soon realize the tremendous energy and environmental benefits of maximizing our existing hydropower projects and infrastructure as well as the suite of emerging wave, tidal, and hydrokinetic technologies.

PREPARED STATEMENT OF THE AMERICAN WIND ENERGY ASSOCIATION

INTRODUCTION

America's wind energy industry experienced a record year of growth in 2009. Industry deployed more than 10,000 megawatts (MW) nationwide, amounting to approximately 40 percent of the country's new electrical capacity and enough to power 2.4 million homes. Although wind systems are commercially deployable today, keeping America's domestic wind industry competitive with other generation sources requires increased research, development, and deployment (RD&D) funding to reduce costs and improve reliability.

Therefore, the American Wind Energy Association (AWEA) requests a funding level of \$186.5 million for fiscal year 2011, which is an increase of \$63.5 million above the President's Congressional budget request for the Department of Energy (DOE) Wind Energy Program. Of this amount, AWEA requests that \$16 million be designated for power system integration and transmission development for "variable generation" sources like wind and solar energy. The \$16 million could be appropriated to either the Wind Energy Program within the Office of Energy Efficiency and Renewable Energy (EERE) or to the Office of Electricity Delivery and Energy Reliability (OE).

DOE provides important 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. Regardless of whether OE or EERE receives grid integration and transmission development funds, it is crucial that both entities work together and with experts at DOE national labora-

tories—particularly the National Renewable Energy Laboratory—to help utilities resolve variability-related issues related to grid integration.

AWEA's funding request of \$63.5 million above the President's Congressional budget request of \$123 million is a significant increase, but was carefully determined via a months-long process involving more than 80 wind industry stakeholders through the AWEA Research and Development Committee. Expert stakeholders identified the funds needed to overcome constraints to meeting the DOE's scenario of wind energy providing 20 percent of our Nation's electricity by 2030 (20 percent Wind Energy by 2030. July 2008).¹

OVERVIEW

For years, the DOE Wind Energy Program has provided essential help to the wind industry by supporting technology advancements and identifying and addressing other hurdles to wind energy development. However, more work is necessary. Wind power is still constrained by difficulties in market acceptance and the need for improvements in cost, performance, and reliability. The 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 clearly 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."² As our Nation turns to wind power to meet more of its energy needs, it is crucial 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 over \$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).

The DOE Wind Energy Program currently receives approximately \$84 million annually. In comparison, the RD&D budgets for many other traditional and emerging energy sources are much higher. For fiscal year 2010, non-defense nuclear RD&D energy programs will receive at least \$787 million, coal programs will receive \$404 million, and solar and biomass energy will receive \$247 million and \$220 million, respectively. A higher Federal funding level for wind energy RD&D will help ensure that wind energy remains competitive with other forms of energy.

IMPORTANCE OF DOE'S WIND ENERGY PROGRAM

The DOE Wind Energy Program has a strong history of success, and the cost-shared industry/Government research and development activities at DOE and NREL have played an important role in keeping the cost of wind energy competitive with other energy sources. AWEA strongly believes that a funding amount of \$186.5 million, provided by the subcommittee, would reflect the importance and impact of the Wind Program's work. OE and EERE should work closely with other national laboratories and organizations, such as NREL and the Utility Wind Integration Group (UWIG), to resolve grid integration challenges associated with wind energy development.

SPECIFIC WIND INDUSTRY PRIORITIES

A team of more than 80 members of AWEA and advisors from industry and academic institutions identified a \$63.5 million deficit in annual DOE funding necessary to support the RD&D and related programs needed to realize the vision of providing 20 percent of America's electricity from wind by 2030. We respectfully urge that Federal funding be provided for four specific areas as follows:

- Systems Integration and Transmission Expansion (\$16 million)
- Wind Turbine Technology and Reliability (\$38 million)
- Small Wind Turbines—100kW and Smaller (\$5.5 million)

¹U.S. Department of Energy, "20 percent Wind Energy by 2030" (July 2008), <http://www.20percentwind.org/20p.aspx?page=Report>.

²ibid.

—Community Wind (\$4 million)

Systems Integration and Transmission Expansion

The systems integration program area focuses on the power system operations issues of integrating variable, non-dispatchable power sources, like wind energy, into the power system. Wind generators in some regions, especially those with small control areas located outside Regional Transmission Organizations, are already being denied interconnection because operational limits for the integration of variable generation have been reached. Yet, numerous studies from the United States and Europe (with significant involvement from DOE-funded experts) have shown that even minor changes to operations can accommodate much greater amounts of wind. Areas of special focus include developing and analyzing additional sources of system flexibility, expanding and implementing power system operation tools, and supporting interconnection-wide integration studies and plans.

Transmission expansion is a key area of focus for meeting the 20 percent by 2030 wind energy goal. This area of funding should focus on issues related to expanding the transmission grid to increase access to areas with rich wind resources. Emphasis should also be placed on making the grid more robust, efficient, and reliable. This will help power to flow across regions, which will be critical to integrating large amounts of wind energy into the system.

Wind Turbine Technology and Reliability

Aiding improvements in wind system technology and reliability is a key component of the AWEA R&D Committee Action Plan. This area focuses on the development of turbine components to reduce capital costs, improve performance, and enhance equipment reliability to achieve the 20 percent vision by 2030. This includes developing lower-cost towers, more reliable gearboxes and generators, advanced blade sensors and controls, and streamlined manufacturing processes. AWEA also recognizes the need to reduce the cost of offshore wind energy technology in order for offshore sources to provide the estimated 54 gigawatts (GW) of the 300 GW needed to meet the 20 percent goal by 2030.

Small Wind Turbines (100 kilowatts and Smaller)

Greater Federal funding for small wind systems, those with capacities of 100 kilowatts (kW) or less, would help the small wind industry provide homes, farms, and small businesses with their own domestic, on-site wind generators. Increased funding for the small wind industry should be used to establish market deployment programs, streamline installation techniques, advance technological components, and improve tools to assess wind resources.

Community Wind

Community-scale wind projects, generally those whose economic benefits flow directly into the communities that host them, face greater commercialization challenges than do traditional wind power projects. Currently, very few Federal programs support community wind development. Many developers lack technical or financial resources, and the limited size of community wind projects often make them less attractive to experienced developers. Funding is needed to create and support a two-part Department of Energy Community Wind Initiative. The first part would create a technical assistance center to provide developers with wind resource data; technical, economic, and financial modeling of potential projects; permitting and brokerage assistance; outreach support, and other essential resources. The second part would fund multi-million dollar competitive DOE grants, over several years, to qualified community wind organizations to support permitting applications, interconnection and transmission agreements, environmental studies, view-shed acceptance, equipment procurement, and other essential aspects of development.

CONCLUSION

The President and Congress have called for a bolder commitment to the development of domestic renewable energy resources, particularly wind energy, 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 the President's call for more renewable energy, AWEA urges the subcommittee to provide \$186.5

million for the Wind Energy Program and OE in fiscal year 2011. 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 reality.

AWEA appreciates this opportunity to provide testimony on DOE's fiscal year 2011 Wind Energy Program budget before the House Appropriations Subcommittee on Energy and Water Development. We thank the subcommittee for its time and attention to our request.

PREPARED STATEMENT OF THE FEDERATION OF AMERICAN SOCIETIES FOR
EXPERIMENTAL BIOLOGY

On behalf of the Federation of American Societies for Experimental Biology (FASEB), I respectfully request an appropriation of \$5.24 billion for the Department of Energy, Office of Science in fiscal year 2011. This figure is in keeping with President Obama's vision for doubling the DOE SC budget. Further, it will enable the Office of Science to continue supporting essential research programs that enhance human health and quality of life, invigorate the economy, bring the Nation closer to energy independence, and drive scientific innovation.

FASEB is composed of 23 societies representing more than 90,000 members, making it the largest coalition of biomedical research associations in the United States. Our mission is to improve human health and welfare by promoting progress and education in biological and biomedical sciences.

The Office of Science is dedicated to investing in "the most exciting and daring research that human kind has ever conceived." The programs and facilities of the DOE SC enable important discoveries in computational sciences, environmental and biological sciences, and energy sciences. For example, DOE scientists are developing tools such as hollow glass microspheres, tiny glass capsules that are one-half the width of a human hair, which have applications ranging from targeted drug delivery to hydrogen storage for batteries. Additionally, work at the DOE national laboratories is increasing the capabilities of supercomputers, allowing for more efficient access to data and faster processing speeds. This and other research funded by the DOE SC drives cutting-edge science and technological innovations that ensure our Nation's safety, bolster our Nation's economy, and improve the day-to-day lives of the American people.

More than 25,000 researchers from various Government agencies, academic institutions, and private industry use the DOE SC's state-of-the-art laboratories and research facilities every year. The national laboratory system is the most advanced of its kind and permits the agency to support vital research in a variety of fields, as well as interdisciplinary research that extends the basic research of many other Federal agencies. In fact, much of the research funded by non-DOE science agencies would not be possible without the DOE's dedicated research infrastructure. At the Brookhaven National Laboratory the synchrotron particle accelerator, with its ability to produce intense light at a variety of wavelengths, is being used by medical scientists from the National Institutes of Health. In research funded by the National Institute of General Medical Sciences, X-rays from the synchrotron are being used to study the structure of proteins involved in Alzheimer's disease. The Office of Science also provides support to many graduate students and early-career postdoctoral researchers. Almost one-half of the DOE SC's research funding supports projects at over 300 academic institutions nationwide.

DISCOVERIES THAT IMPROVE HEALTH AND WELL-BEING

DOE-supported scientists are making remarkable contributions to human health.

—*Restoring Sight to Patients With Vision Loss.*—In conjunction with the National Science Foundation and the National Eye Institute, the DOE Office of Science helped to fund a team of ophthalmologists, engineers, and neuroscientists to create the first ever artificial retina. The groundwork for this development was laid by more than a century's worth of basic research into the structure and function of the eye. By drawing on the work of anatomists, biochemists, electrophysiologists and others, scientists were able to create a device delicate enough not to damage the eye yet complex enough to provide visual input to the human brain. The resulting artificial retina has been shown to restore some level of sight to those who have lost vision due to retinal disease. By 2011, the research team expects to start clinical testing on a version that will allow reading and facial recognition. These studies are bringing new hope to patients who have gone decades without sight.

—*Improving Bone Regeneration.*—Following a fracture, the process of bone proliferation and healing takes several weeks, even months. A research team fund-

ed by the DOE SC is currently developing safe, effective, and inexpensive implant materials to improve this process and shorten healing time. They have identified a growth factor known as lysophosphatidic acid (LPA) that promotes bone regeneration with no detectable toxicity. What's more, LPA can be manufactured at the fraction of the cost of the other bone healing stimulators that are currently available. The next step is for researchers to combine LPA with a hydrogel that, when injected around a damaged bone, will release the growth factor in a controlled manner. This research has the potential to significantly reduce recovery time for the 8 million Americans who suffer bone fractures every year.

—*Mitigating the Impact of Low Dose Radiation.*—The DOE Low Dose Radiation Research Program funds basic research to determine the effects of exposure to low doses of radiation. Researchers long ago established that ionizing radiation, which is present in a wide range of occupational settings, can lead to breast cancer by causing genetic mutations. Recent research DOE has funded, however, has revealed that exposure to ionizing radiation also acts as a carcinogen by affecting the cell proteins responsible for cell-to-cell communication and cellular structure. Thus exposure may result in breast or other types of cancer, even where genetic mutations are not detectable, and the damage can amplify by translating to subsequent generations of cells. Understanding the fundamental cell biology of radiation exposure paves the way for the development of treatments for and protections against low-dose radiation.

CLEANER AND MORE SECURE ENERGY FUTURE

Discoveries in fundamental energy sciences funded by DOE SC are already changing the way we use energy and paving the way for the next generation of environmentally-friendly, sustainable energy sources. Specifically, the Department's newly-formed Advanced Research Projects Agency-Energy (ARPA-E) is working on technologies to meet our most pressing energy needs.

—*Hydrogen Technologies.*—Hydrogen is one of the most abundant elements on the planet, making it an appealing clean energy alternative. However, almost all hydrogen is locked up in water and other compounds. Researchers at the Savannah River National Laboratory are working to advance the most promising method of extracting hydrogen from water—the Hybrid Sulfur Process. This two-step reaction is driven by electricity and heat, both of which can be generated by a nuclear reactor. This simple, efficient process is slated to be used in conjunction with next-generation nuclear plants and has the potential to produce enough hydrogen to power more than 1 million fuel cell cars.

—*Carbon Capture Technologies.*—Natural systems use an enzyme known as carbonic anhydrase (CA) to convert carbon dioxide to bicarbonate, which can then be transported out of tissue. A program funded through ARPA-E is working to apply this process to make the use of fossil fuels less environmentally damaging. The program will develop membrane technology for separating carbon dioxide from flue gas streams, using synthetic forms of CA. The synthetic analogue was created to be more robust than naturally-occurring CA, and thus able to function in harsh environments. This membrane technology developed by the DOE SC is one of many ways currently being explored to increase the efficiency of and reduce the cost involved in carbon capture.

RECOGNIZING THE IMPORTANCE OF DOE RESEARCH

In 2007, the passage of the America COMPETES Act demonstrated Congress' commitment to U.S. science and technology. Now, Congress has the opportunity to reassert this commitment by both reauthorizing America COMPETES and supporting the goal of doubling the budgets of DOE SC, NSF and NIST. Funding DOE SC based on the plan outlined in the President's budget will allow DOE to greatly enhance its groundbreaking research portfolio and permit it to confront current and future energy and health challenges. In keeping with this vision for doubling DOE SC budget, FASEB recommends an appropriation of \$5.24 billion for the Department of Energy, Office of Science in fiscal year 2011.

PREPARED STATEMENT OF THE NATIONAL CARBON CAPTURE CENTER

Mr. Chairman and members of the subcommittee: Southern Company operates the U.S. Department of Energy's (DOE's) National Carbon Capture Center (NCCC) (<http://nationalcarboncapturecenter.com>) at the Power Systems Development Facility (PSDF) in Wilsonville, AL 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 (CO₂) capture technologies by establishing the NCCC with a focus on conducting R&D to advance emerging CO₂ control technologies to commercial scale for effective integration into either combustion or Integrated Gasification Combined Cycle (IGCC) processes. The NCCC will accomplish this goal by providing a test-bed for Government, industrial, and university projects to conduct meaningful tests in an industrial setting. I would like to thank the Senate for its past support of the NCCC and request the subcommittee's continued support as the NCCC responds to the need for developing cost-effective CO₂ capture technology for coal-fueled power generation. This statement supports the administration's budget request for DOE coal R&D which includes about \$39.6 million for work at the NCCC. These funds are necessary to conduct the future test program developed in collaboration with DOE which includes wide-ranging support of the DOE Carbon Sequestration Technology Roadmap.

A key feature of the NCCC is its ability to test new carbon capture technologies for coal-based power generation systems at an integrated, semi-commercial scale. Integrated operation allows the effects of system interactions, typically missed in un-integrated pilot-scale testing, to be understood. The semi-commercial scale allows the maintenance, safety, and reliability issues of a technology to be investigated at a cost that is far lower than the cost of commercial-scale testing. Capable of operating at pilot to near-demonstration scales, the NCCC is large enough to produce data to support commercial plant designs, yet small enough to be cost-effective and adaptable to a variety of technology research needs.

In addition to semi-commercial scale testing, the NCCC will serve as a test bed for cost-effective technology screening by providing slipstreams of actual syngas from coal gasification and flue gas from coal combustion. Future test work at the NCCC will include the scale-up and continued development of several CO₂ capture technologies being developed either at DOE's NETL facility, at private R&D laboratories or at the NCCC. The DOE program for CO₂ capture in coal-fueled power plants is divided into three areas: post-combustion capture for conventional pulverized coal plants, pre-combustion capture for coal gasification power plants, and oxy-combustion processes which produce a more CO₂-rich flue gas than conventional combustion for easier CO₂ capture. The NCCC's CO₂ capture efforts would 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 over 50 percent (compared to the current fleet average of ~32 percent) while producing de minimis emissions and developing cost-effective technologies for CO₂ 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. 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 U.S. 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.

¹ Current NCCC participants include Southern Company, the Electric Power Research Institute (EPRI), American Electric Power, Luminant, NRG, Peabody Energy, Arch Coal, Inc., and Rio Tinto.

² EPRI Report No. 1006954, "Market-Based Valuation of Coal Generation and Coal R&D in the U.S. Electric Sector", May 2002.

One of the key national assets for achieving these benefits is the NCCC. The fiscal year 2011 funding for the NCCC needs to be about \$39.6 million to complete the construction and begin operation of new 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. The major accomplishments at the NCCC to date and the future test program planned by DOE and the NCCC's industrial participants are summarized below.

NCCC (FORMERLY THE PSDF) ACCOMPLISHMENTS

The NCCC test-bed has operated successfully for many years in support of U.S.–DOE's advanced coal program. Skilled staff from disciplines essential for a successful research program has gained experience by designing and operating the test equipment and by working with vendors to develop and improve their technologies. The NCCC has developed testing and technology transfer relationships with over 50 vendors to ensure that test results and improvements developed at the NCCC 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 U.S.–DOE's financial resources. Major subsystems tested and some highlights of the test program at the NCCC include:

Transport Reactor.—The Transport Reactor has been operated successfully on sub-bituminous, bituminous, and lignite coals as a pressurized combustor and as a gasifier in both oxygen- and air-blown modes and has exceeded its primary purpose of generating gases for downstream testing. Since modifications were made in 2006, subsequent testing with air-blown gasifier operations has indicated substantial improvements in syngas heating value and carbon conversion. This transport technology is projected to be the lowest capital cost coal-based power generation option, while providing the lowest cost of electricity and excellent environmental performance.

Advanced Particulate Control.—Two advanced particulate removal devices and 28 different filter elements types have been tested to clean the product gases, and material property testing is routinely conducted to assess their suitability under long-term operation. The material requirements have been shared with vendors to aid their filter development programs.

Filter Safe-Guard Device.—To enhance reliability and protect downstream components, "safe-guard" devices that reliably seal off failed filter elements have been successfully developed.

Coal Feed and Ash Removal Subsystems.—A key to successful pressurized gasifier operation is reliable operation of the coal feed system and ash removal systems. Developmental work on the pressurized coal feed systems has increased the understanding and optimization of their performance. Modifications developed at the NCCC and shared with equipment suppliers allow current coal feed equipment to perform in a commercially acceptable manner. An innovative, continuous process has also been designed and successfully tested that reduces capital and maintenance costs and improves the reliability of fine and coarse ash removal.

Syngas Cooler.—Syngas cooling is of considerable importance to the gasification industry. Devices to inhibit erosion, made from several different materials, were tested at the inlet of the gas cooler and one ceramic material has been shown to perform well in this application.

Advanced Syngas Cleanup.—A slipstream unit has provided flexibility in testing numerous syngas contaminant removal technologies to improve emissions and reduce costs in IGCC gas clean-up.

Sensors and Automation.—Significant progress with sensor development and process automation has been achieved. More than 20 instrumentation vendors have worked with the NCCC to develop and test their instruments under realistic conditions. Development of reliable and accurate sensors for the gasification process has concentrated on coal feed, Transport Gasifier, and filter systems. Automatic temperature control of the Transport Reactor has been successfully implemented.

Fuel Cell.—Two test campaigns were successfully completed on 0.5 kW solid oxide fuel cells manufactured by Delphi on syngas from the Transport Gasifier marking the first time that a solid oxide fuel cell (SOFC) has been operated on coal-derived syngas. Also, a NETL-erected SOFC multi-cell array test skid was successfully tested at NCCC directly on coal syngas.

CO₂ Capture.—Slipstream CO₂ capture testing has been completed on both simulated and actual syngas and results have been used to design larger test equipment.

NCCC FUTURE TEST PROGRAM

Developing technology options that will reduce CO₂ emissions is a primary goal for future work at NCCC. These technologies will be screened in close collaboration with NETL for selection for testing at the NCCC. This facility will serve as a productive test-bed for developing advanced technology and is capable of operating from bench- and pilot-scale to near demonstration scales allowing results to be scaled to commercial application. The NCCC will concentrate on developing cost-effective, commercially viable carbon capture technology for coal-fueled power plants through scale-up and continued development of several technologies (including for example those being developed either at DOE's facilities or by third party technology developers).

For both new and existing power plants, post-combustion capture technology must be made more efficient and cost-effective. In post-combustion capture, CO₂ is separated from the flue gas in a conventional coal-combustion power plant downstream of the pulverized coal boiler. Many post-combustion capture technologies need to be proven and integrated in an industrial power plant setting. Activities at the NCCC for post-combustion capture technology will include:

Pilot-Scale Test Modules.—Pilot-scale test modules of advanced post-combustion technologies will be designed, installed, and operated in an existing pulverized coal plant adjacent to the NCCC. The test modules' flexible design will allow the testing of a wide range of technologies on actual flue gas.

Technology Screening.—Available solvents developed by NETL, third party developers and the NCCC will be screened to assess readiness for testing at the site using improved contacting devices that are now under development.

Alternative Solvent Processes.—Alternative solvents with lower heats of regeneration and more compact, lower cost gas-liquid contacting equipment will be developed and tested.

Advanced Technology.—Compact membrane contactors and solid phase CO₂ 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.

In pre-combustion capture, CO₂ is separated from the syngas in a coal gasification power plant upstream of combustion in the gas turbine. Research and development activities at NCCC for pre-combustion capture technology for application to gasification-based power generation include:

Advanced CO₂ Capture Systems.—New solvents and gas-liquid contacting devices will be assessed on air-blown and oxygen-blown syngas. New CO₂ separation technologies (sorbents or membranes) will be scaled-up and tested based on fundamental R&D progress by third party developers.

Water Gas Shift Enhancements.—New water gas shift reactor configurations and sizes are planned for testing at the NCCC. The operation of shift catalysts when exposed to syngas at the NCCC will be optimized and their technical and economic performance will be evaluated.

Advanced Syngas Cleanup.—New advanced syngas cleanup systems will be tested for reducing hydrogen sulfide, hydrochloric acid, ammonia, and mercury to near-zero levels.

Regarding oxy-combustion, system studies will be used to evaluate the commercial feasibility of operating the Transport Reactor in oxy-combustion mode. Based on study results, oxy-combustion test priority will be determined in collaboration with NETL.

In developing a cost-effective advanced coal power plant with CO₂ capture, all process blocks within the power plant must be optimized in addition to the capture block. Including CO₂ capture in an advanced coal power plant will increase the plant cost of electricity, so opportunities to reduce cost in every part of the process will be explored. With highest priority being given to low-cost CO₂ 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 CO₂ capture addition. These cost reduction projects include technology development for syngas cleanup, particulate control, fuel cells, sensors and controls, materials, and feeders.

PREPARED STATEMENT OF THE GULF RESTORATION NETWORK

I am writing on behalf of Gulf Restoration Network (GRN), a network of over 50 local, regional and national environmental, environmental justice, social justice, and public interest groups dedicated to uniting and empowering people to protect and restore the natural resources of the Gulf of Mexico region. The President's fiscal

year 2011 budget request for the Department of Energy proposes the cancellation of \$71 million in balances from prior year appropriations for an expansion of the Strategic Petroleum Reserve (SPR) at a site near Richton, Mississippi and assumes the use of these balances to partially fund the regular operations and management activities of the SPR.¹ The SPR program is part of the Office of Petroleum Reserves, which in turn is part of the Office of Fossil Energy in the Department of Energy. GRN commends this decision, and strongly urges the Senate Committee on Appropriations Subcommittee on Energy and Water Development to support this portion of the budget request. The cancellation of this funding for the proposed expansion of the SPR near Richton (hereinafter referred to as the Richton project) is a good fiscal, environmental and policy decision.

The proposed Richton project is a poor choice for a number of reasons: (1) it is estimated to cost at least \$16.8 billion,² a price tag that will likely only continue to grow; (2) the Richton site would require at least 330 miles of pipeline, increasing the likelihood of oil or brine spills into the environment;³ and (3) this project would be the first time that DOE has ever relied upon an inland freshwater source to mine the salt, an experimental proposal that worries many scientists familiar with the variable water flows of the Pascagoula River.

COSTS AND FUNDING

The Richton project should not be receiving large Federal investments because the Department of Energy has not completed the Federal mandated National Environmental Policy Act (NEPA) process and released its Record of Decision (ROD). As this Federal mandated process could ultimately lead to a decision to not move forward with the Richton project, any large-scale Federal funding should wait for the completion of the NEPA process. Also, a recent public statement indicates that "DOE believes funds for expansion could better be utilized to ensure ongoing operational readiness of the existing SPR."⁴ The Senate should respect the DOE's priorities and cancel past funding for this project.

Furthermore, the construction costs for the Richton project are estimated to be \$4 billion, and while estimates for the cost of filling the storage area depend on variations in oil prices, the initial fill of the site, based on projected 2010 crude prices, could range between \$12.8-\$13.6 billion.⁵ Using a conservative estimate, this represents an expense of \$16.8 billion or well over one-half of the DOE's proposed budget for this year. Although this expense would likely be spread out over multiple years, it still would involve a significant outlay of Federal funds for questionable benefits to taxpayers.

The Department of Energy considered several different sites as potential locations for an expansion of the SPR, and the Richton site was the most expensive project, and arguably the most environmentally harmful. Halting this destructive and costly project is a great way to begin shifting away from yesterday's problems and start addressing the daunting issues of tomorrow.

ENVIRONMENTAL AND ECONOMIC IMPACTS

Coastal Mississippi relies on its water resources and wetlands to maintain a thriving commercial and recreational fishing industry, promote tourism, and provide industry with their freshwater and transportation needs. Nationally significant water resources like the Pascagoula River, the Mississippi Sound, and the Gulf of Mexico are integral to the coastal economy and environment. Unfortunately, the plan for the Richton project could threaten these same resources. In fact, this plan to hollow out a series of underground salt caverns requires the withdrawal of 50 million gal-

¹"Appendix, President's Budget of the United States Government," (fiscal year 2011):430.

²Construction cost estimates from "Strategic Petroleum Reserve's New Richton Mississippi Site," United States Department of Energy: http://www.fossil.energy.gov/programs/reserves/spr/Richton_Fact_Sheet-Rev2_12-7-07.pdf. Petroleum price estimates based on "Short-Term Energy Outlook," United States Energy Information Administration (March 2010): <http://www.eia.doe.gov/emeu/steo/pub/mar10.pdf>.

³"Strategic Petroleum Reserve's New Richton Mississippi Site," United States Department of Energy: http://www.fossil.energy.gov/programs/reserves/spr/Richton_Fact_Sheet-Rev2_12-7-07.pdf.

⁴Kirgan, Harlan. "Salt Dome put on hold," Mississippi Press, March 24, 2010: http://blog.gulfive.com/mississippi-press-news/2010/03/richton_salt_dome_expansion_project_funds_redirected.html.

⁵Construction cost estimates from "Strategic Petroleum Reserve's New Richton Mississippi Site," United States Department of Energy: http://www.fossil.energy.gov/programs/reserves/spr/Richton_Fact_Sheet-Rev2_12-7-07.pdf. Petroleum price estimates based on predicated crude prices in 2011 "Short-Term Energy Outlook," United States Energy Information Administration (March 2010): <http://www.eia.doe.gov/emeu/steo/pub/mar10.pdf>.

lons of water per day from the Pascagoula River for 5–6 years.⁶ This water would be used to dissolve underground salt, and then the polluted and extremely salty by-product would be pumped off the coast of one of Mississippi's barrier islands. These actions could have significant impacts on the area's environment, including reduction in water flows in the Pascagoula River that could impact coastal estuaries, and a large, salty Dead Zone where the polluted water is released.

Furthermore, according to Department of Energy estimates, the 330 miles of pipelines necessary to complete this project will harm or destroy over 1,500 acres of wetlands and lead to at least 56 brine spills and 19 oil spills during the construction and initial fill of the site.⁷

CONCLUSION

The Richton project is bad policy for the Nation, and bad policy for the people of coastal Mississippi. For years, citizens in Mississippi and throughout the country have been working to stop this expensive and destructive project from moving forward. In fact, thousands of people have contacted Secretary of Energy Steven Chu, as well as their congressional representatives, over the last year to voice their opposition to this boondoggle. Congressman Gene Taylor, who represents Mississippi's 4th, the district that will be most impacted, and Senator Roger Wicker of Mississippi have also expressed significant reservations with the project as currently conceived. It is heartening to see that this proposed budget takes into account the public's input.

GRN strongly supports the cancellation of all previous funding for the Richton project in the President's fiscal year 2011 budget request for the Department of Energy and we urge the Senate Committee on Appropriations Subcommittee on Energy and Water Development and its members to support this portion of the proposed budget.

PREPARED STATEMENT OF THE US FUEL CELL COUNCIL AND THE NATIONAL HYDROGEN ASSOCIATION

On behalf of the members of the fuel cell and hydrogen industries, we thank you for consistently funding the Department of Energy's (DOE) hydrogen and fuel cell technology programs. Fuel cell and hydrogen technologies are a crucial part of the portfolio of advanced energy technologies that will help achieve the Nation's oil and greenhouse gas reduction goals. DOE and other supporting estimates show that domestic hydrogen fuel cells in light duty vehicles, for instance, could reduce oil imports by as much as 3.5 billion barrels per year within 40 years, reduce greenhouse gas emissions by 1.1 billion tons per year, and save consumers \$25 trillion over the succeeding 50 years. These are key public investments, and DOE's programs continue to advance the pace of technology and bring down costs.

As the subcommittee develops the fiscal year 2011 Energy and Water Appropriations recommendations, we urge you to provide \$390 million for the Fuel Cell and Hydrogen Technologies Programs managed by the Energy Efficiency and Renewable Energy (EERE), Science, Fossil Energy (FE) and Nuclear Energy (NE) organizations at the Department of Energy—a 23 percent increase vs. \$316 million appropriated for 2010. This amount would fully fund the critical research, development, demonstration and deployment (RDD&D) of these advanced technologies in order to make them competitive with the conventional ones they need to replace in cost, reliability and performance, and respond to our industry's main priority: deployment of early commercial systems and an advanced fuel cell vehicle demonstration. A detailed list of our program priorities and funding requirements are included in this testimony.

The fiscal year 2011 DOE request for EERE is \$137 million, down \$43 million (–24 percent) from the current 2010 Appropriation of \$180.1 million (including last year's funded earmarks). These cuts propose eliminating funding for market transformation for fuel cells in early markets; education activities; and Federal purchase initiatives, while curtailing all new vehicle deployments under the Technology Validation program. DOE also chose to reduce the Fossil Energy coal to hydrogen program by \$5.8 million. Similarly, at a time when funding for the Solid State Energy Conversion Alliance (SECA) program should be increased to support the megawatt-class demonstration effort, the DOE request is flat. This budget sends a damaging

⁶“Final Environmental Impact Statement for Site Selection for the Expansion of the Nation's Strategic Petroleum Reserve,” United States Department of Energy (2006).

⁷“Final Environmental Impact Statement for Site Selection for the Expansion of the Nation's Strategic Petroleum Reserve,” United States Department of Energy (2006).

message to our industry, our Nation and the world, threatens to weaken U.S. leadership and unbalances the Nation's energy portfolio.

More importantly, by making cuts to fuel cell and hydrogen technology programs, especially early market deployment, hydrogen infrastructure and fuel cell vehicles, and FE fuel cell research and development, DOE is sending negative signals to investors, manufacturers, auto makers, hydrogen gas suppliers, supply chain partners, potential customers, and other Federal agencies, local, State and foreign governments. The lead U.S. energy agency should fully embrace fuel cells and hydrogen infrastructure as an integral component of a comprehensive clean energy package to meet our national greenhouse gas reduction targets. Even worse, hydrogen and fuel cell industries could move offshore and the United States could lose as many as an estimated 675,000 potential net, new jobs.

A robust public-private partnership, exemplified by DOE Technology Validation programs focused on cost reduction and early deployment, will accelerate commercialization and the benefits that accrue with marketplace success.

STRENGTHENING FEDERAL HYDROGEN AND FUEL CELL PROGRAMS

Proposal.—Fund DOE Fuel Cell and Hydrogen programs at enhanced historical levels; revise to reflect program success and current priorities. Restore reductions proposed by the Obama administration for fiscal year 2011.

EERE Programs—\$220 Million

The hydrogen and fuel cell programs in the Department of Energy's Hydrogen, Fuel Cell and Infrastructure Technologies Program support the development of fuel cells, their fuels and supporting infrastructure. The program has made exceptional progress in a few short years, helping dramatically reduce the volume production cost of fuel cells and the consumer cost of hydrogen fuel, testing and evaluating more than 125 fuel cell vehicles in real world operation (U.S.-wide, over 300 vehicles have driven 3 million miles), and helping deploy more than a thousand fuel cell systems to Federal agencies and early private sector adopters to improve energy efficiency and security of supply with low or zero emissions.

Hydrogen and fuel cells have been a largely domestic suite of technologies, and, over the past two decades, the United States has continued to be the recognized leader in their development. Indifference to encouraging commercialization allows other nations, particularly Germany, South Korea, Japan, and China, to capture the lead in establishing and commercializing these technologies, reaping the economic benefits of associated job growth and export revenue. DOE analysis projects that transitioning to a hydrogen economy would yield a net increase in U.S. employment of 58,010 to 182,840 by 2020 and 184,560 to 677,070 by 2035.

Fuel cell technologies are a crucial part of the portfolio of advanced energy technologies that will achieve the Nation's energy policy and greenhouse gas reduction goals. DOE and other supporting estimates show that domestic hydrogen fuel cells in light duty vehicles, for instance, could reduce oil imports by as much as 3.5 billion barrels per year within 40 years, reduce greenhouse gas emissions by 1.1 billion tons per year, and save consumers \$25 trillion over the succeeding 50 years.

Robust public-private partnerships focused on cost reduction and early deployment will accelerate commercialization and the benefits that accrue with marketplace success.

Vehicle and Infrastructure Market Deployment: \$45 Million.—Support for initial sales, backed by a real-world vehicle and fuel testing and evaluation program, is essential to accelerating the transition to commercial market. DOE should extend the Technology Validation program for an additional year with technology insertion (\$15 million), and initiate a Vehicle and Infrastructure Market Deployment program. As their Technology Validation program is winding down, DOE now needs to evolve to support early market volumes of FCVs and related infrastructure consistent with a commercial transition. DOE Proposal: \$11.0 million

Market Transformation: \$45 Million.—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. DOE supports the program but has deferred funding—and thus deferred job creation—to 2012. DOE should continue Market Transformation activities in all market sectors. Congress should expand the program to include State agencies and private sector customers and clarify that all fuel cell technologies are eligible. DOE Proposal: \$0.0

Fuel Cell R&D: \$67 Million.—DOE's robust program of cost reduction via research into materials, catalysts and components should continue. Distributed fuel cells sys-

tems provide energy efficiency and security benefits; DOE's program should continue. DOE Proposal: \$67.0 million

Hydrogen Fuels R&D: \$40 Million.—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. DOE Proposal: \$40.0 million

Enabling Activities: \$18 Million.—These programs prepare local communities for fuel cell installations, fueling stations and fuel cell vehicles, and help DOE evaluate program options.

—Systems Analysis gives DOE tools to evaluate the program and calculate public benefits. (\$5 million)

—Safety, Codes and Standards development sets safety rules and product standardization guidelines, and trains local enforcement officials and first responders. (\$9 million)

—Education informs the public and potential customers about these technologies to break down awareness barriers. (\$2 million) DOE Proposal: \$14.0 million.

Manufacturing Research: \$10 Million.—Improvements in manufacturing are a critical component in cost reduction; DOE's program should continue and expand. DOE Proposal: \$5.0 million

—*Paying for These Enhancements Within the EERE Program.*—Program Direction (+43 percent) and Program Support (+94 percent) enjoy large gains that go far beyond any associated subprogram level of effort increases—totaling +55 percent over fiscal year 2010, at \$287.3 million (vs +5 percent for EERE generally). These funds are generally rather loosely programmed, leaving generous margins for unnamed discretionary spending. They have not been as carefully explained as other program elements. Some of their expected functions might be more explicitly included within definite program areas—for example, technology advancement, commercialization and market development. We also believe that the next stage of the H-Prize should see modest funding from these allocations.

Fossil Energy Programs: \$118.8 Million

SECA Program: \$70 Million.—The Solid State Energy Conversion Alliance (SECA) is a cost shared public-private partnership developing high temperature Solid Oxide fuel cells for power generation. SECA's development targets to date have been met ahead of schedule, but continued support is needed to move to the megawatt scale demonstration phase. Commercial Solid Oxide fuel cells will make possible a 60 percent efficient coal fired power plant and kilowatt-scale solid oxide fuel cell modules for grid-independent distributed generation. Additionally, it will make it easier and cheaper to sequester CO₂ from coal. Fully funding the SECA program at \$70 million would assure continued progress and save jobs threatened by the administration's proposal. DOE Proposal: \$50.0 million

Fuels—Hydrogen from Coal Research: \$17.8 Million.—The Fuels activity helps reduce technological market barriers for the reliable, efficient and environmentally friendly conversion of coal to hydrogen. This specifically focuses on developing technologies that reduce costs and facilitate the production of ultra high-purity hydrogen from coal. Research for both stationary and transportation applications should continue. DOE Proposal: \$12.0 million

Hydrogen Turbines: \$31.0 Million.—Hydrogen turbine development efforts implement projects that will enable efficient, clean, and cost effective hydrogen fueled turbines for coal-based integrated gasification combined cycle power systems that capture and store CO₂. DOE program should continue. DOE Proposal: \$31.0 million

Nuclear Energy Programs: \$8.5 Million

Advanced Reactor Concepts: \$8.5 Million.—The Advanced Reactor Concepts program, an expanded version of the Generation IV research and development (R&D) program, sponsors research and development for further safety, technical, economical, and environmental advancements of innovative nuclear energy technologies. Specific guidance encouraging DOE to continue R&D on High Temperature Electrolysis and thermochemical cycles from the former Nuclear Hydrogen Initiative should be included. DOE Proposal: \$0.0

Science Programs: \$38 Million

The Office of Science includes funding for a variety of important materials activities with applications for hydrogen and fuel cell technologies, and which is spread between a number of Science program areas. DOE Proposal: \$38 million

Total fiscal year 2011 Proposed: \$390 million
 Total fiscal year 2011 DOE Request: \$268 million
 Total fiscal year 2010 appropriation: \$316 million

Further Background.—The national German industry agreements across manufacturers, energy suppliers and utilities have set the stage for wide public-private cooperation that could be readily adopted by the United States, and clearly illustrates the pace of how fuel cell vehicle and fueling infrastructure rollout can be solved. Similar efforts are underway in Japan and Korea, and will soon evolve in China. Moreover, the South Korean Government, through the adoption of targeted sliding subsidies, has jumped to the lead in the deployment of stationary CHP and residential fuel cells, which will decrease costs while drastically increasing fuel efficiency and reducing greenhouse gas emissions. A link to a government and industry webinar from February 17, 2010 is <http://www.hydrogenassociation.org/webinar/17feb10.asp>

A Senate briefing from March 5, 2010 also included a review from GM, Daimler and Linde, all participants in the German agreements. Presentations can be found at http://www.hydrogenassociation.org/policy/briefing_5mar10.asp.

PREPARED STATEMENT OF NUSCALE POWER, INC.

Dear Mr. Chairman and ranking member: On behalf of NuScale Power of Corvallis, Oregon we request that the subcommittee approve the President's budget request of \$38.8 million for small, modular reactors within the Office of Advanced Reactor Research Development and Demonstration. Our request is directed at both the research portion for advanced SMR's and especially the commercialization cost-share portion for up to two light water reactor SMR's designs.

It is also our request that language be included to clarify that Government-industry cost-sharing include but not be limited to NRC fees and other related work activities leading to the submission of a Design Certification Document to the NRC. This later clarification is consistent with other previous Government-industry cost shared programs. We would be happy to discuss ways to control the taxpayer's long-term financial commitment to such a program for SMR's.

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. The specific request for funding of small, modular reactors reflects the opportunity these new, innovative plant designs offer to strengthen our ability to achieve those goals. Small, modular reactor technologies build on a rich history of American innovation and world class nuclear design and operations. In particular, they will expand the potential market for new nuclear plants by reaching smaller markets, and they would do so while minimizing the magnitude of the financial challenge posed by larger nuclear plant designs.

The NuScale design was originally developed by Oregon State University, working with Idaho National Laboratory and Nexant-Bechtel, as part of a Department of Energy funded research program and validates the effectiveness of such programs in bringing new technologies to the market. In addition to developing the design, this program funded the development of a one-third scale "test facility" at Oregon State University, uniquely positioning the NuScale technology for licensing. NuScale Power is a privately funded company which was formed in 2007 for the sole purpose of commercializing this design under a Technology Transfer Agreement with Oregon State University.

Much has been accomplished already in this ambitious undertaking:

- Some 30 highly-skilled engineers and contractors now work for NuScale and as many more work for the company under contract with U.S. companies. We expect to triple that number in the next 12–18 months.
- Two separate panels of independent experts have evaluated the safety of the NuScale plant and their conclusions have been confirmed by a Level 1 Probabilistic Risk Assessment. These results were presented to the NRC in September 2009 and showed NuScale has achieved a safety margin that is exponentially greater than the already large margins of existing nuclear power plants.
- In 2008, NuScale organized a Customer Advisory Board with senior executives representing five major utilities in the United States. In February 2009, one of those companies, Energy Northwest, entered a Memorandum of Understanding with NuScale to explore the siting of a NuScale plant in their system.
- In a report prepared by the Electric Power Research Institute, NuScale was identified as the first small, modular reactor vendor to fully vet a Customer Requirements Document with its potential customers. In NRC parlance this

means NuScale is already working with customers to make its plant “market ready.”

All these efforts to date have been funded by private investments. Notwithstanding these encouraging developments, significant financial barriers remain before this technology can reach the market. The costs to prepare and submit an application for design certification and the subsequent costs for NRC review can be daunting and pose financial challenges that are increasingly difficult in the current economic climate. Customers too are concerned about the incremental costs of first of a kind investment. We are encouraged that the independent Nuclear Regulatory Commission staff—with the support of all three newly appointed Commissioners—is preparing for the submission of new SMR designs in the coming years in order to conduct the proper public safety evaluation, design and operating licensing certification. But if America is to maintain its place in the global market, and if the full potential of this new technology is to impact the domestic market in support of the President’s energy goals, the cost-sharing proposal in the current budget request would make a vital difference.

Yes, much has been accomplished. And yes, there is much work yet to be done. We ask for your support in these efforts.

PREPARED STATEMENT OF THE COALITION FOR THE COMMERCIAL APPLICATION OF
SUPERCONDUCTORS (CCAS)

CCAS respectfully requests that \$45 million be included as a line item for High Temperature Superconductivity R&D in the fiscal year 2011 budget for the Department of Energy, Office of Electricity Delivery and Energy Reliability.

The President’s proposed fiscal year 2011 budget for the DOE Office of Electricity Delivery and Energy Reliability (OEDER) contains a greatly reduced budget for High Temperature Superconductivity (HTS) of \$4,860,000 under the label Advanced Cables and Conductors. Further, the intent is to eliminate all spending on HTS R&D and demonstrations in fiscal year 2012.

Since its inception in 1988, the HTS program has enjoyed the strong, bipartisan support of Congress. Substantial progress toward commercialization has been achieved. Over this period, American taxpayers have made a major investment, alongside private capital, to ensure that the dramatic HTS materials discoveries made in the United States in the late 1980s are translated into beneficial products for United States consumers. We have also supported this investment to ensure a strong U.S. position in an emerging, very large, globally competitive field involving multiple applications and the concomitant high quality research and manufacturing jobs that will be realized.

HTS is a game changing development for energy generation, transmission and distribution for the 21st century and many thousands of high quality research and manufacturing jobs hang in the balance. While the United States still leads the world in HTS R&D and pre-commercial demonstrations, the leadership position in this critical technology has eroded substantially over the past 5 years as many foreign governments, particularly Korea, China, Japan, and Europe are increasing their support for HTS R&D as they realize the large number of jobs and the export value of the high tech products that potential leadership will bring.

HTS R&D has brought the technology from a laboratory materials discovery in Houston in 1987 to pre-commercial demonstration insertions in the U.S. electric power grid. Benefits are a 60–70 percent reduction in resistive power losses versus any other conductor; substantial reduction in right-of-way requirements; extremely high power transmission capability at reduced voltages; improved aesthetics and security from underground cable location; and a major reduction in carbon footprint from greatly improved power transmission and distribution efficiency. HTS R&D is also bringing major size and weight benefits to transformers and generators and creating unique opportunities to limit the spread of fault currents and attendant grid system blackouts thereby enabling a smarter transmission and distribution grid. These developmental products are at the prototype demonstration stage. The HTS R&D conducted in OEDER has also underpinned advances in superconductor wire development that are being used in other applications. Examples are a degaussing system for the Navy, now being tested at sea as a means to reduce or eliminate the magnetic signature of ships making them invisible to mines; and a full size HTS electric ship drive motor also under evaluation by the Navy at the Philadelphia shipyard. Both of these products effect a 50 percent reduction in both size and weight versus conventional approaches, gains typical of superconductor based products. In science, HTS is the only way in which to achieve higher magnetic field strength essential to advance today’s accelerator and collider technology. This

high magnetic field capability is equally applicable to advances in NMR and MRI for scientific and medical research. For more information: www.ccas-web.org.

The United States is in an international race to commercialize HTS wire and cable applications for the power grid. Now is not the time to cut HTS R&D funding when the technology is just a few years from large scale commercialization. The fledgling industry cannot afford to bear the total cost of development at this time, which makes U.S. Government support essential. The \$45 million annually over the next few years is needed to ensure an internationally competitive position for the United States in a technology, invented and largely developed here, that will be a major commercial jobs creator with attendant benefits for national security. Funding of demonstration projects within DOE has typically been allocated on a competitively bid, cost share basis.

CCAS is a U.S. non-profit organization and members are involved in the end-use, manufacture, development and research of superconductor based systems, products and related technologies. Members comprise large and small corporations, research institutions, National Laboratories and universities with operations in most States.

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 U.S. Department of Energy 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 operated by DOE in this area. This should be base program funding, with no competitive portion. 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. We also support \$300 million 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 an increase in the budget for the Energy Information Administration (EIA) to \$145 million, including an increase for EIA's State Heating Oil and Propane Program, in order to cover the added costs of increasing the frequency of information collection, the addition of natural gas, and increasing the number of State participants. 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 the Energy Independence Security Act of 2007 ("EISA"). EIA conducted a study of their capabilities and resources under section 805 of EISA, and this study supports increased funding. NASEO continues to support funding for a variety of critical buildings programs, including Building Codes Training and Assistance, Energy Star, the commercial buildings initiative, residential energy efficiency and Building America, at a level of \$257 million in fiscal year 2011. NASEO also supports base funding (in addition to any congressionally-directed projects) for the Office of Electricity Delivery and Energy Reliability ("OE"), at least at the fiscal year 2011 request of \$186 million. 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 a \$150 million level to promote efficiency efforts and to maintain U.S. manufacturing jobs, especially in light of the loss of millions of these jobs in recent years. Additionally funding should be provided to support sections 451 and 453 of EISA, relating to combined heat and power and other waste heat recovery programs.

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 revolving loans, utility-based programs, energy service performance contracts, etc.

In January 2003, Oak Ridge National Laboratory (ORNL) completed a study and concluded, "The impressive savings and emissions reductions numbers, ratios of savings to funding, and payback periods . . . indicate that the State Energy Program is operating effectively and is having a substantial positive impact on the Nation's energy situation." ORNL updated that study and found that \$1 in SEP funding yields: (1) \$7.22 in annual energy cost savings; (2) \$10.71 in leveraged funding from the States and private sector in 18 types of project areas; (3) annual energy savings of 47,593,409 million source BTUs; and (4) annual cost savings of \$333,623,619. The annual cost-effective emissions reductions associated with the energy savings are

equally significant: (1) Carbon—826,049 metric tons; (2) VOCs—135.8 metric tons; (3) NO_x—6,211 metric tons; (4) fine particulate matter (PM10)—160 metric tons; (5) SO₂—8,491 metric tons; and (6) CO—1,000 metric tons. The energy cost savings is much higher today, in light of higher prices.

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 the State Energy Program, \$5 billion for the Weatherization Program, \$3.2 billion for the Energy Efficiency and Conservation Block Grant and \$300 million for the Energy Star appliance rebate program, etc.

This is a major task. We are working closely with the Department of Energy's, Energy Efficiency Renewable Energy Division (Cathy Zoi), the Office of Weatherization and Intergovernmental Programs (Claire Johnson), Matt Rogers in the DOE Secretary's office, NETL and Golden, the DOE General Counsel (Scott Harris), 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 cooperating with the other State and local organizations to share best practices and provide 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 and as the economy rebounds this will help create "Green Jobs" and major energy improvements 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 Weatherization, 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, over \$1 billion is now under contract and work is being implemented. Another \$1 billion has been committed to projects, including awards. We expect the remainder to move quickly. We and DOE are working through the barriers that slowed spending, including NEPA 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.

Industrial Energy Program.—A funding increase to a level of \$150 million for the Industrial Technologies Program (ITP) is warranted. This is a public-private partnership in which industry and the States work with DOE to jointly fund cutting-edge research in the energy area. The results have been reduced energy consumption, reduced environmental impacts and increased competitive advantage of manufacturers (which is more than one-third of U.S. energy use). The States play a major role working with industry and DOE in the program to ensure economic development in our States and to try to ensure that domestic jobs are preserved. State energy offices are working effectively with DOE on the "Save Energy Now" campaign. Funding for distributed generation and specific funding for sections 451 (including the Clean Energy Applications Centers) and 453 of EISA is critical and should be included above the \$150 million proposal.

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 \$5 million for energy efficient school retrofit grants.

California.—The State has committed to a comprehensive residential building retrofit program, retrofits for municipal and commercial buildings, a finance program for municipalities, State building retrofits through revolving loans (\$25 million), clean energy business financing, low-interest loans for local governments and "Green Jobs" workforce training (\$20 million), etc.

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.

Iowa.—This State has committed substantial funding to municipal energy efficiency projects and green jobs initiatives. They have also instituted an energy loan program. Funding has supplemented programs and projects conducted under the \$100 million Iowa Power Fund.

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.

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.

Mississippi.—\$17 million was dedicated for energy efficient public buildings, including retrofits, performance contracting and building energy codes and \$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.

Missouri.—This State's extensive residential energy efficiency program is providing loans, grants and rebates to homeowners to install energy efficiency measures. Funding has also been provided to train residential energy auditors. They have also initiated an industrial and manufacturing energy efficiency initiative, as well as an agricultural energy program.

Montana.—\$22.3 million has been allocated to State universities, community colleges and other State facilities for energy efficiency projects; 87 projects are underway. A revolving loan program has been set up for homeowners and small businesses to install alternative energy systems. Additional funds have been dedicated to renewable energy demonstration projects.

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.

North Dakota.—The State instituted a high efficiency furnace rebate program to help victims of the 2009 spring floods. The State also instituted a statewide energy efficiency and renewable energy rebate program in partnership with rural electric cooperatives, municipally-owned utilities and the investor-owned utilities. Projects have included blender pumps for retailers (e.g. West Fargo, Minot, Grand Forks, Edgeley, Wyndmere and Bowman) and flare gas electricity generation (Williams County).

Ohio.—\$42.6 million has been allocated for a variety of renewable energy activities, including manufacturing, waste-to-energy and biofuels, \$8 million has been dedicated to energy efficiency and geothermal for new and existing buildings, \$30 million is capitalizing a revolving loan program for all sectors, and \$15 million is committed to energy efficiency for industry.

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.

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. Activities include energy efficiency retrofits, LEED ratings, on site generation, etc.

Tennessee.—This State has committed its resources to three major solar initiatives including a solar and economic development program, creating a Tennessee Solar Institute at ORNL and creating a large solar farm.

Texas.—\$137.8 million has been allocated for public sector building energy efficiency, including revolving loans for schools, hospitals, municipalities, public colleges, etc. and \$52 million has been allocated for a competitive renewable energy grant program. Energy sector training projects have been granted to junior colleges and technical institutes. Transportation efficiency programs have also been funded.

Utah.—Funds have been allocated for residential and commercial energy training, advanced energy efficiency for buildings, whole home audit programs, builder rebates for high performance home building, direct installation for insulation, energy

efficiency in State buildings, grants for energy efficiency in public schools, revolving loans for public schools and competitive grants for highly innovative energy efficiency projects. Renewable energy projects for State-owned buildings and public schools have also been funded. The \$10 million in loans for State agencies is projected to leverage \$60 million in other funds.

Washington.—Approximately \$20 million was allocated for a energy efficiency and renewable energy loan and grant program. Over 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). Funding was also allocated for energy efficiency in agricultural uses and community wide residential and commercial energy efficiency pilots received \$14 million in grants.

West Virginia.—Almost \$13 million has been dedicated to energy efficiency projects in higher education buildings and K–12 schools. State buildings also received funds for energy efficiency projects. A green collar jobs training program was also initiated.

PREPARED STATEMENT OF ASME

Mr. Chairman, ranking member and members of the subcommittee: The ASME Energy Committee is pleased to provide this testimony on the fiscal year 2011 budget request for research and development (R&D) programs in the Department of Energy (DOE).

INTRODUCTION TO ASME AND THE ASME ENERGY COMMITTEE

The 127,000-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. While the Energy Committee supports much of the fiscal year 2011 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 that we remain concerned about the decrease in funding for fossil energy, which is essential to meeting our national energy needs now and in the future.

CRITICAL ISSUES

The Energy Committee would like to point out some critical energy issues:

- Additional investment guarantees for construction of new electrical capacity, especially nuclear facilities, must be enacted in future legislation. These guarantees will enable lower financing costs for a variety of energy technologies and fuel sources that will be available for the American public. Extending these programs further into the future will allow a reasoned rate of increase in construction and application of these technologies for electric generation. It is critical that non-biased, critical analysis of known potential energy/environmental/technical benefits and impacts drive allocation. These must consider capacity value (reliable contribution to load trends) of resources as well as capacity factor, and also losses from proximity or remoteness from load. These additions translate to much more efficient use of subsidy dollars.
- There is a critical shortage of trained personnel in the workforce at all levels. This includes scientists and engineers who will conduct research, those who will

operate and maintain the systems, as well as people in building trades that will be essential for the construction of our energy systems and in industry that will manufacture the components. “Regaining our ENERGY Science and Engineering Edge” or “RE-ENERGYSE,” a program being conducted jointly by the DOE EERE and the National Science Foundation (NSF) and geared to young scientists and engineers, is a positive step toward addressing this chronic issue. We would like to see this program honored in fiscal year 2011.

FOSSIL ENERGY

The fiscal year 2010 budget request of \$760 million for fossil energy represents a \$190 million decrease over the fiscal year 2010 appropriation; a 20 percent decrease over the fiscal year 2010 budget request. Fossil Energy Research and Development would be reduced by \$85 million to \$586 million; however, much of this is covered by stimulus funding in the near term. Funding for Natural Gas Technologies and for Unconventional Fossil Energy Technologies would be eliminated. The budget for the Strategic Petroleum Reserve would be suspended. The Energy Committee encourages funding for coal research programs and urges a restoration to at least the levels appropriated for fiscal year 2010 in future years when the stimulus funding has been expended. The effective use of coal in today’s environment demands an increase in efficiency and a decrease in release of environmentally harmful waste streams. Coal remains a critical resource for our Nation and its economy; however, and we must continue to invest in technological advancements that will reduce emissions 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.

ADVANCED RESEARCH PROJECTS AGENCY-ENERGY (ARPA-E)

The Energy Committee supports the \$300 million budget request for the Advanced Research Projects Agency-Energy (ARPA-E). This is a worthwhile endeavor for the DOE as we seek to accomplish technological breakthroughs in energy technology.

NUCLEAR ENERGY

The Energy Committee is pleased to see an overall increase in the DOE Nuclear Energy budget to \$912 million in fiscal year 2011, a \$42 million increase over the fiscal year 2010 appropriated amount. However, the Energy Committee is discouraged at the discontinuation of the Generation IV Nuclear Energy Systems program. The Energy Committee is curious to see how the proposed Reactor Concepts RD&D program distinguishes itself from the traditional R&D program under the Office of Nuclear Energy. Nuclear energy, as a low-carbon, non-greenhouse 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. Sustained increases in nuclear power research are justified by the imperative of reliable, low cost, low emissions electricity.

Before its cessation in the fiscal year 2009 Omnibus Appropriations bill, the Global Nuclear Energy Partnership (GNEP) program was a vital means to enhancing the future of safe, reliable, nuclear power through the establishment of international centers for nuclear fuel cycle services for nations both large and small. Although no funding is provided for GNEP, the Advanced Fuel Cycle Initiative, now called Fuel Cycle R&D, would receive \$201 million in funding in fiscal year 2011, a \$65 million increase. The ASME Energy Committee remains hopeful that the administration, with the aid of Congress, will eventually reconsider the discontinuation of GNEP, which continues to exist as an international collaborative effort, but minus U.S. participation.

ENERGY EFFICIENCY AND RENEWABLE ENERGY

The Office of Energy Efficiency and Renewable Energy (EERE) manages America’s investment in research, development and deployment of DOE’s diverse energy efficiency and renewable energy applied science portfolio. The fiscal year 2011 request of \$2.35 billion, \$112 million above the fiscal year 2010 appropriated amount, 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, have received sizable increases in funding to support the growth of renewable energy. The Energy Committee encourages 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 RE-ENERGYSE program is slated to receive \$50 million as part of the fiscal year 2011 request. Facing a deficit of engineers in the United States, the Energy Committee believes that this could be an effective step toward replenishing our Nation's workforce by encouraging young people to pursue science and engineering. Therefore, the Energy Committee strongly supports full funding for the RE-ENERGYSE program, something that did not receive funding for the fiscal year 2010 appropriation.

The Energy Committee 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 2011 budget for biomass and bio-refinery systems R&D is slated to receive no increase at \$220 million for fiscal year 2011, identical to the fiscal year 2010 appropriated amount. It should be noted that this program did receive \$777 million as part of the American Recovery and Reinvestment Act (Public Law 111-5). Therefore, the Energy Committee supports the current appropriation and encourages Congress to ensure that these research programs continue to receive adequate funding. We are also pleased to see the \$325 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 Energy Committee 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 Energy Committee is pleased by the increased 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 2011 budget proposal of \$5.12 billion is an increase of \$217 million over 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 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.

OTHER DOE 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 Energy Committee 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 will only extend and increase the final cost of the environmental management program. The energy committee 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. Congress should appropriate the funds to ensure that this work is accomplished in an expeditious manner.

CONCLUSION

Members of the ASME Energy Committee 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 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 ASME Energy Committee is pleased to respond to requests for additional information or perspectives on other aspects of our Nation's energy programs.

PREPARED STATEMENT OF THE GULF COAST RESEARCH LABORATORY

I am writing to you as a marine biologist with over 40 years of experience in fisheries science. I would like to share my concerns with you about the proposed plans to construct an expansion site for the Strategic Petroleum Reserve (SPR) at Richton in Perry County, Mississippi.

The Richton Site differs from DOE's four existing Strategic Petroleum Reserve (SPR) sites located in other States and these differences were not adequately addressed in the original Environmental Impact statement. The Richton project is the first SPR to place the brine diffuser in a marine environment near a barrier island pass and the use of diffusion models designed for other locations to explain circulation processes in Mississippi waters is totally inappropriate and not based on "sound science". The physiography of the Mississippi Bight and circulation patterns within this region are unique. There are serious concerns that the Pascagoula River Basin will suffer as a result of the project's withdrawal of 50 million gallons of water per day for a period of 5 to 6 years concurrent with the daily diffusion of 42 million gallons of toxic salt brine (236 ppt) waste at a discharge site south of Horn Island Pass. This site is directly in line with the Pascagoula Ship Channel and may serve as a conduit for movement of brine northward. Based on the best available oceanographic models for the area, there is the probability that the brine will not diffuse as it does in other areas, but will actually enter the Mississippi Sound with a component of the discharge moving westward along the south side of the barrier islands toward the Chandeleur Islands in Louisiana. This would create a "brine pool" within the Sound and would establish a "brine barrier" across the island passes. Mississippi's barrier island passes are key corridors for the transport of larvae and postlarvae of economically important fish and shellfish to and from the Mississippi Sound and the effect of a "brine barrier" on these fragile life stages may be catastrophic.

The Pascagoula River is the largest unaltered, undammed river system in the United States and is considered a "Natural Treasure". There is concern that salt water intrusion resulting from the vast discharge of brine south of Horn Island Pass coupled with decreased freshwater flow may alter coastal ecosystems and impact rare, threatened, and endangered species (14 listed by the Mississippi Department of Marine Resources). Mississippi is dependent on its water resources and wetlands to maintain commercial and recreational fisheries and protection of these natural resources is a priority for the people of Mississippi.

PREPARED STATEMENT OF ENERGY NORTHWEST

Energy Northwest is writing to express its support for the President's fiscal year 2011 budget request of \$38.9 million for the Department of Energy's small, modular nuclear reactor (SMR) program. This funding will help avoid delays in the Federal licensing by the Nuclear Regulatory Commission for such projects.

The President's budget request would support public/private partnerships to advance mature SMR designs, and research, development and demonstration of innovative SMR technologies and concepts.

Energy Northwest is a joint operating agency headquartered in Richland, Washington and comprised of 28 publicly owned utilities from across Washington State. The agency owns and operates four electric generating plants: Columbia Generating Station (nuclear power plant), Packwood Lake Hydroelectric Project, Nine Canyon Wind Project and White Bluffs Solar Station. As part of Energy Northwest's evaluation of options for meeting future wholesale power supply needs of its members, the concept of building a small reactor that could be grouped with other modules to meet future load group is currently being studied.

At a time when the United States is charting an energy course to increase national energy security and promote greater development of low- or no-carbon emission resources, SMRs hold great promise. Potential benefits of SMRs include providing utilities greater flexibility in terms of capital investment, financing, siting and sizing.

Thank you for the opportunity to submit these views.

PREPARED STATEMENT OF THE AMERICAN PUBLIC POWER ASSOCIATION

The American Public Power Association (APPA) is the national service organization representing the interests of over 2,000 municipal and other State and locally owned utilities throughout the United States (all but Hawaii). Collectively, public power utilities deliver electricity to 1 of every 7 electric consumers (approximately 45 million people). We appreciate the opportunity to submit this statement outlining our fiscal year 2011 funding priorities within the Energy and Water Development Subcommittee's jurisdiction.

Renewable Energy Production Incentive (REPI).—APPA requests \$5 million for the Renewable Energy Production Incentive (REPI). The Department of Energy's REPI program was created in 1992's Energy Policy Act (EPAct) as a counterpart to the renewable energy production tax credits made available to for-profit utilities, and was reauthorized through 2016 in the Energy Policy Act of 2005 (EPAct05). EPAct05 authorizes DOE to make direct payments to not-for-profit public power systems and rural electric cooperatives at the rate of 1.5 cents per kWh (1.9 cents when adjusted for inflation) from electricity generated from a variety of renewable projects. While the program had been zeroed out in recent years by the Bush and Obama administrations, Congress has consistently restored funding at \$5 million until last year. In fiscal year 2010, the REPI program received no funding. As Congress works toward adopting a Federal renewable portfolio standard and a climate change mitigation program, REPI becomes increasingly more important to not-for-profit utilities. Several non-profit utilities that have been relying on the program to help fund renewable programs, have been abandoned by the lack of funding. While the demand for the program is truly \$25 million, \$5 million would restore funding.

POWER MARKETING ADMINISTRATIONS (PMA'S)

Power Marketing Administration Proposals.—In past years, various measures have been proposed for all four PMAs that would have had the effect of raising the rates for PMA customers. We appreciate that the fiscal year 2011 request does not include these types of proposals.

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 2011, which are as follows: \$553.6 million for Western Area Power Administration (WAPA); \$88.6 million for Southeastern Power Administration (SEPA); and \$49 million for Southwestern Power Administration (SWPA).

Storage for High-level Nuclear Waste.—APPA is disappointed in the administration's lack of support for the Department of Energy used nuclear fuel management program. However, we support efforts by the administration to study alternatives to Yucca Mountain and request a funding level of \$340 million for the Office of Radioactive Waste Management at the Department of Energy.

Nuclear Loan Guarantees.—APPA is pleased with the administration's request of \$54.5 billion for DOE Loan Guarantees for Innovative Energy Technology and encourages the subcommittee to maintain this level of funding.

Department of Energy Waterpower Program.—APPA requests \$100 million for fiscal year 2011 for the DOE's Waterpower Program. At a time when utilities around our country must focus on finding carbon-free sources of energy, 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 2011 are as follows: Building Technologies—\$231 million; Industrial Technologies—\$100 million; Federal Energy Management Program—\$42 million; and Vehicle Technologies—\$325 million. We urge the subcommittee to maintain these funding levels. We however encourage the subcommittee to increase funding for the EPA ENERGY STAR program over the requested amount of \$55.4 million.

Weatherization and Intergovernmental Activities.—We are pleased that the administration has requested \$385 million for the Weatherization program in fiscal year

2011, a 30 percent increase from fiscal year 2010 and we encourage the subcommittee to maintain that level of funding.

Clean Coal Power Initiative (CCPI) and FutureGen.—APPA is disappointed that the budget did not include funding for large scale commercial applications of carbon capture and sequestration technology. The American Recovery and Reinvestment Act (ARRA) included \$800 million for the CCPI Round 3 program and we encourage the subcommittee to include funding for a CCPI round 4 program. Funding for FutureGen was made available in the ARRA. APPA strongly believes as concerns grow over climate change and the effects of man-made emissions from combustion of fossil fuels, the FutureGen project 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 administration on finding an appropriate role and funding level for the FutureGen project.

Fuel Cells.—APPA was disappointed with the funding request of \$50 million for fiscal year 2011 for fuel cell related research and development. This is a 7 percent decrease from fiscal year 2010 levels. We urge the subcommittee to allocate additional funding for this program for fiscal year 2011.

Fuels and Power Systems.—We recommend these funding levels for the following programs: Innovations for Existing Plants—increase from \$65 million to \$84 million; Advanced Integrated Gasification Combined Cycle—increase from \$55 million to \$80 million; Turbines—increase from \$31 million to \$45 million; Carbon Sequestration—increased from \$143 million to \$150 million; Fuels—support the President's request; Advanced Research—support President's request of \$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.

Federal Energy Regulatory Commission (FERC).—The fiscal year 2011 budget requests \$315 million for FERC, an increase over fiscal year 2010 levels. APPA supports this increase.

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, Crop Science Society of America, and Soil Science Society of America (ASA–CSSA–SSSA) are pleased to submit the following funding recommendations for the Department of Energy for fiscal year 2011. For the Office of Science, ASA, CSSA, and SSSA recommend a funding level of \$4.9 billion, a 10 percent increase over fiscal year 2010 (\$4.47 billion). For the Office of Energy Efficiency and Renewable Energy, we recommend a funding level of \$2.4 billion, a 7 percent increase over fiscal year 2010. Specifics for each of these and other budget areas follow below.

With more than 25,000 members and practicing professionals, ASA–CSSA–SSSA are the largest life science professional societies in the United States dedicated to the agronomic, crop and soil sciences. ASA–CSSA–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–SSSA understand the challenges the Senate Energy and Water Appropriations Subcommittee faces with the tight budget for fiscal year 2011. We also recognize that the Energy and Water Appropriations bill has many valuable and necessary components, and we applaud the subcommittee for funding the DOE Office of Science in the fiscal year 2010 Omnibus Appropriations bill at \$4.470 billion. For fiscal year 2011, ASA, CSSA, and SSSA recommend a funding level of \$4.9 billion, a 10 percent increase over fiscal year 2010. Congress approved the America COMPETES Act of 2007 (Public Law 110–69), 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 being shipped 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. Nearly one-third of its research funding goes to support research at more than 300 colleges and universities nationwide. Moreover, approximately one-half of the users at Office of Science user facilities are from colleges and universities, providing further support to their researchers. 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 \$4.9 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 \$4.9 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 1,000 PhDs, postdoctoral associates, and graduate students in fiscal year 2011; ensure maximum utilization of DOE research facilities; allow the Office of Science to develop and construct the next generation facilities necessary to maintain U.S. preeminence in scientific research; and enable DOE to continue to pursue the tremendous scientific opportunities outlined in the Office of Science Strategic Plan and in its 20 Year Scientific Facilities Plan.

BASIC ENERGY SCIENCES

Within the Office of Science, the Basic Energy Sciences (BES) Program is a multi-purpose, 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. ASA, CSSA, and SSSA support a fiscal year 2011 funding level of \$1.75 billion, a 7 percent increase over fiscal year 2010, for BES. The portfolio of programs at BES supports research in the natural sciences by focusing basic (discovery) research on, among other disciplines, biosciences, chemistry and geosciences. Practically every element of energy resources, production, conversion and waste mitigation is addressed in basic research supported by BES programs. Research in chemistry has led to the development of new solar photoconversion processes and new tools for environmental remediation and waste management. Research in geosciences leads to advanced monitoring and measurement techniques for reservoir definition. Research in the molecular and biochemical nature of photosynthesis aids the development of solar photo-energy conversion.

Within the Basic Energy Sciences Program, the Chemical Sciences, Geosciences, and Energy Biosciences subprogram supports fundamental research in geochemistry, geophysics and biosciences. For Chemical Sciences, Geosciences, and Energy Biosciences subprogram ASA–CSSA–SSSA recommend \$341.5 million for fiscal year 2011, a 15 percent increase over the fiscal year 2010 funding level. 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. The Biosciences Research Program supports basic research in molecular level studies on solar energy capture through natural photosynthesis; the mechanisms and regulation of carbon fixation and carbon energy storage; the synthesis, degradation, and molecular interconversions of complex hydrocarbons and carbohydrates; and the study of novel biosystems and their potential for materials synthesis, chemical catalysis, and materials synthesized at the nanoscale.

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. In addition, BER develops and delivers the knowledge needed to support the President's plan to make America energy independent. ASA–CSSA–SSSA support a 10 percent increase for BER which would bring the funding level to \$664.6 million for fiscal year 2011. ASA, CSSA, and SSSA support a variety of programs within BER including the Life Sciences subprogram which supports Terrestrial Ecosystem Science (which we recommend funding for at \$29.9 million for fiscal year 2011), Terrestrial Carbon Sequestration Research (we recommend \$5.1 million for this program) and the Genomes to Life (GTL) program. Within Genomes to Life (GTL) are programs supportive of bioenergy development including GTL Foundation Research,

GTL Sequencing, GTL Bioethanol Research, and GTL Bioenergy Research Centers, all playing an important role in achieving energy independence for America. We recommend a 12 percent increase over fiscal year 2010 for the Subsurface Biogeochemical Research program, with suggested funding for the program totaling \$55.9 million in fiscal year 2011. Also within BER is the Environmental Remediation subprogram and its Environmental Remediation Sciences Research program, both critical programs to advancing tools needed to clean up contaminated sites.

ASA, CSSA, and SSSA recommend a funding level of \$305.7 million, a 7 percent increase over fiscal year 2010 for BER Climate and Earth System Modeling. Within this subprogram the Climate Change Research Division supports important areas of climate change research including the Ameriflux and a network of research sites.

DEPARTMENT OF ENERGY OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY

Biomass is currently the only clean, renewable energy source that can help to significantly diversify transportation fuels in the U.S. DOE's Energy Efficiency and Renewable Energy Biomass Program is helping transform the Nation's renewable and abundant biomass resources into cost competitive, high performance biofuels, bio-products, and biopower. The Office of Energy Efficiency and Renewable Energy (EERE) manages America's investment in the research and development (R&D) of DOE's diverse energy efficiency and renewable energy applied science portfolio. For the Office of Energy Efficiency and Renewable Energy, we recommend a funding level of \$2.4 billion, a 7 percent increase over fiscal year 2010. The fiscal year 2011 EERE budget should continue to maintain focus on key components of the AEI and Twenty in Ten including the Biofuels Initiative to develop affordable, bio-based transportation fuels from a wider variety of feedstocks and agricultural waste products. Note: ASA-CSSA-SSSA strongly oppose the use by the Department of the term "agricultural wastes". Crop residues, e.g., corn stover, play a very important role in nutrient cycling, erosion control and organic matter development. Recent studies have shown that excessive removal of crop residues from agricultural lands can lead to a decline in soil quality. By no means should they ever be referred to as "wastes".

BIOMASS AND BIOREFINERY SYSTEMS

Within EERE, the Biomass and Biorefinery Systems R&D program plays an important role providing support for Regional Biomass Feedstock Development Partnerships and Infrastructure Core R&D programs, both within Feedstock Infrastructure. For the Biomass and Biorefinery Systems R&D program, we recommend a 7 percent increase for fiscal year 2011 which would bring funding to \$235 million. Activities included within this program are resource assessment, education, sustainable agronomic systems development, and biomass crop development. The mission of the Biomass Program is to develop and transform our domestic, renewable, and abundant biomass resources into cost-competitive, high performance biofuels, bio-products and biopower through targeted RD&D leveraged by public and private partnerships. ASA, CSSA, and SSSA support \$39.58 million in funding for the Feedstock program (formerly the Feedstock Infrastructure program).

CLIMATE CHANGE RESEARCH

ASA, CSSA, and SSSA urge the subcommittee to continue to provide strong support for Climate Change Research to the following programs as follows: U.S. Global Change Research Program (USGCRP), DOE allocation of \$176.9 million. This program will increase our understanding of the impacts of global climate change and also develop tools and technologies to mitigate these impacts.

BASIC AND APPLIED R&D COORDINATION

The Office of Science continues to coordinate basic research efforts in many areas with the Department's applied technology offices. Within this area is Carbon Dioxide Capture and Storage R&D for which we recommend \$20,055,000.

NATIONAL LABORATORIES

The Office of Science manages 10 world-class laboratories, which often are called the "crown jewels" of our national research infrastructure. The national laboratory system, created over a half-century ago, is the most comprehensive research system of its kind in the world. Five are multi-program facilities including the Oak Ridge National Laboratory.

NATIONAL ENERGY TECHNOLOGY LABORATORY (NETL)

NETL's Carbon Sequestration Program is helping to develop technologies to capture, purify, and store carbon dioxide (CO₂) in order to reduce greenhouse gas emissions without adversely influencing energy use or hindering economic growth. Terrestrial sequestration requires the development of technologies to quantify with a high degree of precision and reliability the amount of carbon stored in a given ecosystem. 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. ASA, CSSA, and SSSA urge the subcommittee to direct the Department to increase funding for its terrestrial carbon sequestration program, specifically The Regional Carbon Sequestration Partnerships, which are collaborations between Government, industry, universities, and international organizations funded by DOE to determine the most suitable technologies, regulations, and infrastructure needs for carbon capture and sequestration.

OAK RIDGE NATIONAL LABORATORY (ORNL)

ORNL is one of the world's premier centers for R&D 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 COAL UTILIZATION RESEARCH COUNCIL (CURC)

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

THE IMPORTANCE OF THE DOE/FE RD&D PROGRAM

CURC believes there is a serious disconnect in public policies regarding CCS technology. On one hand, we observe general agreement among policy makers that large reductions in GHG emissions in the 2030–2050 timeframe are essential to meet climate goals under discussion; that improved technologies are key to meeting those goals; that CCS is a crucial technology; and that public sector-private sector collaboration is necessary to launch CCS technology. On the other hand, based on budgets requested and enacted for the past several years and proposed for fiscal year 2011, we observe an unwillingness to provide the public share of resources necessary to develop and enable deployment of CCS within the timeframe set forth by those defining emission reduction targets. Insufficient public resources means we are falling farther and further behind and there is less expectation each passing year that CCS will be ready for widespread commercial use by 2020.

With the advent of a greenhouse gas regulatory program in this country, it is vitally important that affordable and reliable carbon capture and storage (CCS) technologies be available to minimize the economic impacts upon the American consumer while continuing to allow the Nation to reap the economic and energy security benefits associated with using our most abundant domestic fossil fuel resource. Recent analyses by both the EPA and the DOE/EIA have concluded that successful development and deployment of CCS technology can reduce the cost of compliance with GHG legislation by one-half. Hence, an effective coal-CCS RD&D program is essential for meeting environmental goals, enhancing our country's energy security, insuring adequate supplies of energy at affordable prices, as well as preserving American industrial competitiveness and growing American jobs in domestic and global markets.

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.

SPECIFIC RECOMMENDATIONS

CURC offers the following recommendations for fiscal year 2011 funding for the Coal RD&D program.

Clean Coal Power Initiative.—DOE did not request any funding in fiscal year 2010 or fiscal year 2011 for large scale commercial applications of CCS technology, noting that \$800 million was provided in the American Recovery and Reinvestment Act (ARRA) for the CCPI Round 3 program. The number of CCS-related projects that are underway is insufficient to meet the programmatic goal of establishing CCS technologies ready for commercial deployment by 2020. CURC believes that an expanded CCPI program is integral to the commercialization of CCS technologies, and therefore, in the strongest terms possible, CURC recommends that the fiscal year 2011 budget include funding to initiate a CCPI Round 4 program. Congress is encouraged to appropriate at least \$50 million in fiscal year 2011 to be augmented in fiscal year 2012 with funds sufficient to then conduct a CCPI 4 solicitation.

FutureGen.—Funding for FutureGen has been made available through the ARRA. CURC reiterates its support for this project as an important and necessary step in the demonstration of an integrated CCS system. This integration of electricity generation with CCS is fundamental to the learning necessary to make CCS a commercial reality.

FUELS & POWER SYSTEMS

—*Innovations for Existing Plants (and Advanced Combustion).*—The administration's request for fiscal year 2011 includes an increase in this line item to \$65 million, compared to \$52 million enacted in fiscal year 2010. CURC recommends a budget of \$84 million that should be used to support technologies that increase the efficiency of coal conversion to energy and that contribute to reducing the costs of carbon capture from combustion-based power generation—for both new and existing steam power plants. To achieve these goals funds should be allocated to address specific needs for advanced combustion, including oxy-combustion and next generation oxy-combustion process cycles, advanced solvents for post combustion capture, the high temperature materials program for ultrasupercritical cycles, as well as emphasis on other new power plant efficiency-improving techniques which do not depend on steam temperature and pressure leaving the boiler. Finally, the implementation of post-combustion carbon capture will place increased demands on what are already scarce supplies of cooling water, and, as a result, research on water management technologies for coal-fired power plants need to be an important component of the IEP program; recommend \$4 to \$6 million for water management programs.

—*Advanced Integrated Gasification Combined Cycle.*²—Funding provided for IGCC technology has consistently fallen short of the amounts deemed necessary to launch the next generation of this technology as defined in the CURC–EPRI Technology Roadmap. The administration's request for fiscal year 2011 is a further decrease from these already insufficient funding levels. CURC recommends that the funding for this line item be increased from the requested \$55 million to at least \$80 million. This increased budget is important to achieve:

- Advances in coal feed systems;
- Low-cost oxygen production (such as ITM oxygen);³
- Advanced gasifier designs (including the gasifier itself; its major components such as feed injection/pumping and refractory materials, as well as gasifier modifications to achieve less costly air separation);
- Warm syngas cleanup for sulfur and other coal-based syngas contaminants (such as mercury and arsenic);
- Hydrogen/CO₂ separation and recovery (including advanced membrane systems);
- CO₂ capture at elevated pressure (to reduce CO₂ compression costs); and
- Studies and RD&D aimed at the integration of these advanced gasification technologies to significantly reduce overall gasification capital costs and improve overall efficiencies.

—*Turbines.*—The latest generation of advanced gas turbines (the “G” and “H” class of turbines) is not ready to meet the demands of IGCC plants with high

²It 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, hydrogen and fertilizer production, SNG, and coal-to-liquids programs and to these ends this program should encompass the concept of advanced gasification technology.

³This program should include sufficient funding to insure that the 100-ton per day ITM Intermediate Scale Test Unit will be completed and operations commenced.

levels of CO₂ capture. Reduced funding in the last few years has delayed progress and jeopardized DOE's 2012 goal of developing advanced turbines capable of operating on 100 percent hydrogen. The Turbines program needs an additional \$14 million, for a total of \$45 million in fiscal year 2011. Technical focus areas for this funding should include:

- Promising material systems (base alloys, bond coats and thermal barrier coatings) for hot gas path parts including rotating and stationary airfoils;
- Technology for enhanced cooling effectiveness of hot gas path parts;
- Methods for containing by-pass flows in the combustor-expander transition piece and the airfoil tip-casing interface; and
- Continuation of work with the NETL in-house research group, other national laboratories and U.S. universities to assess combustor designs and the fundamentals associated with hydrogen combustion and turbine subsystems.

It is important to note that all carbon fuels, including natural gas, will need to capture CO₂ in order to achieve the levels of reduced CO₂ concentrations being proposed in various climate change legislation now under consideration by Congress.

—*Carbon Sequestration.*—Funding under this program offers the appearance of being slightly below the \$160 million level recommended by CURC. However, this DOE program includes approximately \$50 million for CO₂ capture, whereas the CURC roadmap places capture activity with the IGCC and IEP programs. The result is that CURC believes the fiscal year 2011 Carbon Sequestration request falls significantly short of needs, and this shortfall will result, for example, in the slow-down of some of the Regional Carbon Sequestration Partnership projects. Ultimately, the vast majority of CO₂ sequestration will likely take place in saline formations and even under the seabed. As a consequence the majority of funding for this program should be focused on sequestration into saline formations rather than for CO₂ hydrocarbon recovery or other CO₂ re-use projects. Moreover, some ongoing tests are with non-anthropogenic CO₂, or non-power system CO₂, whereas experience integrating commercial scale capture at power systems with injection into saline formations is the foundation for broad deployment of CCS. At a minimum the funding level for this program should be increased to \$150 million versus the \$143 million requested.

—*Fuels.*—CURC supports the President's budget recommendation for hydrogen from coal, research for hydrogen separation membranes for power production, and developing components for process intensification to reduce the capital cost of power systems. CURC believes that coal-to-substitute natural gas (C-SNG) systems are commercial and that these systems may provide a relatively low cost mechanism to provide the large volume of CO₂ needed to simulate commercial power plant CO₂ injection processes. Also, gasification of coal and biomass (zeroed out in the fiscal year 2011 Request) combined with CCS may be a useful pathway to provide transportation fuels with a lower CO₂ footprint than conventional sources of these fuels.

—*Advanced Research.*—The budget request for Advanced Research focuses on sensors and controls, advanced materials, and new computer simulation activities for capture and storage of CO₂. The new computer simulation activities would boost overall Advanced Research funding by \$20 million from \$28 million (fiscal year 2010) to \$48 million (fiscal year 2011). CURC supports a balanced advanced research program at DOE or through the newly created ARPA-E program where use of a portion of the funds is tightly integrated with the overall coal R&D program with clear deliverables which will address barriers or any technology "gaps" to meeting DOE's objective of commercial deployment of CCS by 2020. To achieve this end this program directly supports externally funded applied research programs carried out by university and industry-based organizations that are seeking research results which are responsive to the current marketplace. The AR program or an ARPA-E program also should vigorously support new initiatives that promise ways to cost-effectively prevent or capture CO₂ from the use of carbon-based fuels. This type of basic research looks beyond today's technologies to the next generation and private sector funds may not be readily available. Again, we believe a strong relationship between industry, academia and DOE is vital.

—*University and Workforce Training and Education.*—CURC additionally recommends that the DOE budget be available to support academic or university based programs to build up the expertise that is declining in coal technology research and development activities. A well funded advanced research program, as well as university based programs, can help replenish the scientists and engineers needed to create the coal utilization systems and carbon management systems of the future. Also, appropriations should be made to reinstate pro-

grams to train the skilled trades workforce needed to construct and operate the energy industry of tomorrow including the utilization of CCS technologies.

—*Fuel Cells.*—The DOE Solid State Energy Conversion Alliance (SECA) program is ready to move into MW-scale demonstrations. A primary objective of the program is the development of high temperature solid oxide fuel cells (SOFC) for integration with advanced coal gasification systems. Fuel cells offer the promise of a step change in the way electricity is generated in the future and, if successful, could provide highly efficient, cost-competitive systems capable of capturing nearly all of the CO₂ from the conversion process, minimizing water requirements for the system and greatly reducing emissions of other criteria pollutants.

Title XVII Loan Guarantee Program

Consistent with the loan guarantee capacity already provided or sought for other energy sources (\$65.5 billion for renewables and energy efficiency and \$56.5 billion for nuclear power) and given the potential impact of widely deployed CCS technology upon CO₂ reductions globally, it is recommended that loan guarantee authority for fossil energy and CCS projects be increased by \$20 billion. There appears to be very significant interest among CCS-related fossil fuel projects for use of loan guarantees if made available.

SUMMARY AND COMMENTS ON SIGNIFICANT ISSUES RELATED TO THE FISCAL YEAR 2011
BUDGET REQUEST

The programs administered and supported through the Department's Fossil Energy office have been distinguished by efforts to foster collaboration with industry research, development and demonstration efforts, as well as a broad spectrum of university research organizations. These programs between industry, Government and the academic community have enabled participants to actively engage in each part of the technology development chain from basic research to applied research and development and then demonstration and early commercial deployment. Implementing a restructuring of the FE budget into four new cross-cutting program areas could facilitate even greater partnering opportunities, focus programs upon the critical issues surrounding CCS development, quickly identify and address technology gaps, and create greater transparency in defining and exhibiting program goals and accomplishments. During this restructuring, the benefits of collaboration should be an important consideration if it is contemplated that there will be any new and significant involvement of other Federal laboratories that have little or no historical ties to the industries that rely upon coal and benefit from collaboration through the FE program.

CURC supports the request to increase the Department's advanced research budget so long as increases are inclusive and extend funding support to research efforts at universities and industry participants in all regions of the country wherever the competency and excellence exists. CURC also supports the request to increase the computationally based research (subject to the comments below) budget. The new emphasis upon computational modeling is conceptually attractive as a means to reduce the amount of time and funding required in fully developing, demonstrating and deploying technology. This funding should be implemented through existing structural models already established by NETL for industry—university collaborative research—and we recommend such an approach which will use structures in place and further support already successful collaboration. Finally, if these new programs are to be accepted by industry as a tool to create substitutes for “steel in the ground” then it is essential that industry be involved in the development of the computer models to insure that practical considerations in the construction and operation of power plants or industrial facilities are taken into account. Therefore, industry should be consulted to determine if computer models are an appropriate surrogate for actual plants being constructed and if yes, and funding is to be provided, then direct industry input is recommended when constructing the models themselves.

Beyond basic research CURC is expressly concerned that no funding is requested to initiate a next CCPI solicitation for advanced coal and CCS demonstrations. If we are to successfully develop a portfolio of advanced technologies to utilize coal efficiently and with minimal environmental impact then we must continue support for demonstration projects.

PREPARED STATEMENT OF THE UNIVERSITY OF CHICAGO

My name is Donald Levy and I am Vice President for Research and National Laboratories at the University of Chicago. The University of Chicago manages, sup-

ports, and engages with two major Federal research centers: Argonne National Laboratory and the Fermi National Accelerator Laboratory (Fermilab). The University's management and operations responsibility for Argonne dates back to its founding in 1946 as the Nation's first national laboratory, and is a direct descendant of the University of Chicago's Metallurgical Laboratory, part of the World War II Manhattan Project. In partnership with Universities Research Association, the University of Chicago was awarded the M&O contract by the Department of Energy for Fermilab in 2007. Argonne and Fermilab are leaders in ensuring U.S. competitiveness in the global economy, and providing unmatched science talent and capacity for the Midwest and the Nation. The fundamental science and applied research that takes place in them, often in collaboration with the University of Chicago and numerous other universities across the country, continues to push the frontiers of scientific discovery, energy security, environmental sustainability and national security. I am pleased to testify in strong support for the administration's proposed fiscal year 2011 budget request of \$5.1 billion for the Office of Science.

THE DEPARTMENT OF ENERGY'S OFFICE OF SCIENCE

The Department of Energy's Office of Science (SC) is the steward of 10 national laboratories—including the Argonne National Laboratory and Fermi National Accelerator Laboratory. This system of national laboratories provides direct and vital support for the mission of the Department's science programs and represents the most comprehensive research infrastructure system of its kind in the world. A high level of collaboration among all of the national laboratories with the university community and industry in the use of world-class scientific equipment and supercomputers, facilities, and multidisciplinary teams of scientists increases their collective contribution to DOE and the Nation. The national laboratories sponsored by the SC enables the United States to remain at the forefront of discovery science. They ensure that facilities and projects of great scale are part of the Nation's scientific infrastructure and provide the foundation for translating the results of discovery science into technological applications.

SC is also one of the Nation's largest supporters of peer-reviewed basic research, providing 40 percent of Federal support in the physical sciences while supporting approximately 25,000 Ph.D.s, graduate students, undergraduates, engineers, and support staff at more than 300 universities and at all 17 DOE laboratories. In fiscal year 2010, the Office of Workforce Development for Teachers and Scientists expects to support over 1,100 undergraduates in research internships at the DOE laboratories and nearly 300 K-16 educators. SC is proposing to increase the Graduate Fellowship Program to support approximately 400 graduate students in the out-years.

The subcommittee is faced with very tight fiscal constraints and a difficult set of choices. Given that situation, the fiscal year 2011 DOE budget for SC deserves the subcommittee's strong support for the following reasons: It invests in science for national needs in clean energy, the environment and materials research; it provides vital support for national scientific user facilities relied on by universities and industry working on research that can't be performed anywhere else in the United States; and it supports scientific and technological education and related workforce development.

The fiscal year 2011 budget request makes much needed investments to harness the power of American ingenuity. This request will help create clean energy jobs, expand the frontiers of science, reduce dependence on foreign oil, and help curb the carbon pollution that threatens our planet. If one advance could transform America's prospects, it would be having a range of clean, efficient and renewable energy technologies, ready to power our cars, our buildings and our industries, at scale, while creating jobs and protecting the planet. If we want to own those future technologies, there is only one path: sustained support for research.

We should not count on private industry alone to make the necessary investments. Since 1980, research investment by U.S. energy companies paralleled the drop in public research. By 2004, corporate energy R&D stood at just \$1.2 billion in today's dollars. This level might suit a cost-efficient and technologically mature fossil-fuel-based energy sector. However, it is very much out of step with any industry that depends on innovation.

The lesson is that while industry must support development and commercialization, only Government can prime the pump of research. Congress funded the basic research that spawned the information technology revolution and the biotechnology revolution. Today, to spark an energy revolution, Congress—and this subcommittee in particular—must lead again.

The potential, from the economy to global security to climate, is boundless. Yet we are not the only ones who have noticed. If we fail to make major strategic invest-

ments in energy research now, we will find ourselves overtaken by our competitors, from China and India to Germany and Japan. Other countries have the money and motivation, and they are chasing the technology almost as fast as we are. We must make sure that in the energy technology markets of the future, we have the power to invent, produce and sell, not the obligation to buy.

The handwriting is clearly on the wall—the Great Wall.

ARGONNE AND FERMI NATIONAL LABORATORIES

In the coming years, the Argonne National Laboratory will pursue major initiatives that support the Department of Energy's research goals to create innovative and transformational solutions to the Nation's grand scientific challenges. These initiatives have inspirational goals that will keep Argonne at the very forefront of scientific discovery and engineering excellence. Three of the major initiatives: Hard X-ray Sciences, Leadership Computing, and Materials and Molecular Design and Discovery, emphasize the development of next generation scientific tools and materials. Five other major initiatives: Energy Storage, Alternative Energy and Efficiency, Nuclear Energy, Biological and Environmental Systems, and National Security, directly address practical energy, environment and security challenges. A number of these initiatives, in areas such as computational sciences, molecular design and biological and environmental systems are being conducted in close collaboration with the University of Chicago's core research capabilities.

Fermilab's world-class scientific research facility allows qualified researchers from around the world to conduct fundamental research at the frontiers of high-energy physics and related disciplines. Thousands of scientists have used Fermilab's particle accelerators and experiments to study the universe at the smallest and largest scales. The extraordinary technology developed for particle physics has often led to real-life applications—from accelerators for cancer treatment to the World Wide Web. Fermilab's broad scientific program pushes forward on the three interrelated frontiers of particle physics. Each uses a unique approach to making discoveries, and all three are essential to answering key questions about the laws of nature and the cosmos.

Among the initiatives proposed by the Office of Science of particular importance to the University of Chicago, Argonne and Fermilab are:

- Basic Energy Sciences program support for upgrades to Argonne's Advanced Photon Source (APS). The high-brilliance x-rays produced at the APS—the brightest in the Western Hemisphere—has been instrumental in developing new and improved energy sources, bettering the environment, battling diseases, improving technologies, unlocking the secrets of our planet and universe, and furthering the education of today's and tomorrow's scientists. We urge the subcommittee to provide strong encouragement to DOE to support vital future performance enhancements in the APS;
- Advanced Scientific Computing Research program support for Argonne's Leadership Computing Facility. The application of state-of-the-art supercomputers to modeling and simulation can play breakthrough roles linked to our energy security, climate change and sharpen America's competitive edge. The applications also provide benefits to program offices and their external users throughout the Department of Energy. We urge the subcommittee to support the fiscal year 2011 budget request and remain committed to a robust funding path in future years in order to fully achieve the next level of computational power needed to address the next series of important large-scale challenges;
- The High Energy Physics Program, including continued support for Tevatron Collider research, enhancements for the neutrino physics program and complex wide infrastructure improvements;
- The newly proposed Energy Innovation Hub for Batteries and Energy Storage—which will focus on integrating from fundamental research through potential commercialization of electrical energy storage relevant to transportation and the electric grid; and
- Vital support for individual investigator, small group, and Energy Frontier Research Centers (EFRCs) in areas complementing the initial suite of 46 EFRCs awarded in fiscal year 2009.

CONCLUSION

As President Obama made clear in his remarks to the National Academy of Sciences in April 2009, the public sector must invest in research and innovation not only because the private sector is sometimes reluctant to take large risks, but because the rewards will be broadly shared across the economy. Leading requires assembling a critical mass of the best scientists and engineers to engage in mission-

oriented, cross-disciplinary approaches to addressing current and future energy challenges. To develop clean energy solutions and maintain the U.S. leadership role in science and innovation, the Department must cultivate the science, technology, engineering, and mathematics workforce of the next generation. The University of Chicago strongly supports the administration's goal to double funding for the DOE's Office of Science between fiscal year 2007 to fiscal year 2017, a goal that is consistent with the recommendations in the National Academies' 2005 report *Rising Above the Gathering Storm*. To that end, the University of Chicago strongly supports funding of at least \$5.1 billion for SC in fiscal year 2011—the amount requested by the administration.

The subcommittee is faced with a difficult and probably thankless job—the allocation of too few resources among a wide variety of worthy and compelling public policy objectives. Some of these objectives are near term and funding provided for them can lead to tangible benefits such as the cleanup of nuclear waste sites or water and flood protection projects funded through the Corps of Engineers. The benefits of investing in research are less visible in the near term. However, they are essential to the long term health and economic vitality of the Nation. Appreciating the difficult budget environment the subcommittee must confront, the University of Chicago respectfully requests the maximum support possible for the important research programs of DOE in the context of the fiscal year 2011 appropriations process.

Thank you for the opportunity to provide these views.

PREPARED STATEMENT OF THE SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS
(SIAM)

Summary.—This written testimony is submitted on behalf of the Society for Industrial and Applied Mathematics (SIAM) to ask you to continue your support of the Department of Energy (DOE) Office of Science by providing \$5.121 billion in fiscal year 2011. In particular, we urge you to provide significant support for the Applied Mathematics Program within the Office of Science. We also emphasize the importance of support for graduate students, post-doctoral fellows, and early career researchers.

My name is Douglas Arnold and I am the President of the Society for Industrial and Applied Mathematics (SIAM). Today I am submitting this written testimony for the record to the Subcommittee on Energy and Water Development of the Committee on Appropriations of the U.S. Senate.

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 over 400 institutional members—colleges, universities, corporations, and research organizations.

First, I 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. In particular, we thank you and your colleagues for the significant increases in funding provided for the Office of Science's mathematical and computing programs in the fiscal year 2010 Consolidated Appropriations bill.

Today, I submit this testimony to ask you to continue your support of the DOE Office of Science in fiscal year 2011 and beyond. In particular, we request that you provide the Office of Science with \$5.121 billion, the level requested by the President for this agency in his fiscal year 2011 budget. This represents a 4.4 percent increase over the Office's fiscal year 2010 appropriated level and would continue the effort to double funding for the Office of Science, as endorsed by Congress in the America COMPETES Act and by the President in his fiscal year 2011 budget request.

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 climate modeling, nanotechnology, biofuels, genomics, and materials fabrication.

THE ROLE OF MATHEMATICS IN MEETING ENERGY CHALLENGES

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. 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.

In August 2007, an independent panel of mathematicians 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 The panel considered a broad and varied array of questions that the DOE must answer in the coming years. A representative subset of such questions includes:

- Can we predict the operating characteristics of a clean coal power plant?
- How stable is the plasma containment in a Tokamak?
- How quickly is climate change occurring and what are the uncertainties in the predicted time scales?
- How quickly can an introduced bio-weapon contaminate the agricultural environment in the United States?
- How do we modify models of the atmosphere and clouds to incorporate newly collected data of possibly new types?
- How quickly can the United States recover if part of the power grid became inoperable?

In these and many other cases, the answer is dependent on improved understanding of complex systems. (These are systems that 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.) In light of this broad need, 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.)

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 \$426 million requested for ASCR for fiscal year 2011, while urging that the increase in funding be more balanced among ASCR programs and not entirely directed to investments in computing hardware. 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, and the proposed activity on Computational Design of Advanced Engines within the Basic Energy Sciences Office.

¹Applied 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.

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 and the environment. 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 post-doctoral fellows at DOE national laboratories and universities. In addition, we endorse DOE's proposed continuation in fiscal year 2011 of the Office of Science Early Career Research Awards and Graduate Fellowships programs begun with funding from the American Recovery and Reinvestment Act.

We are also supportive of the proposed DOE education initiative, RE-ENERGYSE (REgaining our ENERGY Science and Engineering Edge). We too believe in the core goal of raising the number of students studying in areas that contribute to the fundamental understanding of energy science and engineering systems. In particular, we support graduate research fellowships in relevant fields, such as applied mathematics, and programs that encourage universities to establish multidisciplinary research and education programs, such as in computational science, which is a key element in projects studying and creating clean energy capabilities.

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, positioning the United States to lead on climate change policy, technology, and science, and facilitating 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.

SIAM is aware of the significant fiscal constraints facing the administration and 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; stimulate economic activity; and help to maintain U.S. pre-eminence in innovation, upon which our economy depends.

I 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 increases to maintain our competitive edge in science and technology, and therefore we respectfully ask that you continue your robust support of these critical programs into the future.

I 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 2011 appropriations process.

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 2011 budget requests for the Department of Energy (DOE). In particular, GE recommends: (1) in the Renewable Energy budget, support for the new Offshore Wind Technology program; (2) in the Fossil Energy program, greater focus on carbon capture technologies for new plants and increased investment in integrated gasification combined cycle technology; (3) in Nuclear Energy, support for additional nuclear loan guarantee authority; and (4) funding in Electricity Delivery and Energy Reliability to accelerate smart grid deployment.

Renewable Energy.—GE supports the request for \$49 million in funding for the new Offshore Wind Technology Program. Investment in pilot projects will enhance learning, improve infrastructure, and pave the way for commercial scale offshore wind to become a reality in the United States.

For emerging offshore as well as maturing onshore applications, blades and drive trains are the most critical wind turbine components. Research and development into advanced materials, advanced manufacturing, design for logistics, advanced power conversion, and drive train systems can increase energy production, increase reliability, reduce material cost, and lower the overall cost of energy. New power generation technologies, such as higher torque density generators, can be adapted to wind. As penetration of wind energy increases, significant advances are needed to develop solutions for grid integration of this variable resource. Government investment in these areas, when combined with industry cost share, can significantly accelerate technology advancements beyond what industry can accomplish on its own.

Fossil Energy.—In Coal R&D, within the Fuels and Power Systems line item, an \$8 million reduction is being proposed for the Advanced Integrated Gasification Combined Cycle program while funding for the Innovations for Existing Plants program would be increased by \$13 million. GE is concerned that these funding changes indicate a fundamental and troubling shift in DOE's emphasis. The increased funding for Existing Plants will be focused on small-scale pilots—essentially returning to the bench. This is a flawed strategy. It implies DOE's acceptance of the long time span—over a decade or more—from bench to commercial deployment. Over this timeframe, while the creation of jobs associated with commercializing CCS is delayed, existing plants that would benefit will be moving closer to retirement, and therefore unlikely to warrant investment in new technology to extend their lives.

Rather than focusing taxpayer dollars in numerous small pilot scale cleaner coal experiments, the time has come to invest in technology enhancements applicable to new cleaner coal plants and proven technologies for carbon capture such as gasification within integrated gasification combined cycle (IGCC). In contrast to combustion technology, gasification is well suited for carbon capture and proven in commercial chemical applications. IGCC with carbon capture is commercially available to the utility industry today. However the higher initial capital cost of IGCC combined with the additional cost and parasitic loads from carbon capture currently place it at a disadvantage relative to power generation from natural gas. If coal with its economic, jobs and infrastructure benefits is to continue in our energy mix, improvements in IGCC cost and performance are needed to reach cost-parity with natural gas. While we believe much of the cost gap can be closed through deployment of IGCC with carbon capture, further technology improvements in IGCC have the highest chance of making their way to commercial deployment and reducing the ultimate costs of CCS.

We therefore recommend that the fiscal year 2011 budget for IGCC be increased by \$25 million for total funding of \$80 million, with the increase focused on the development of key cost and performance enhancements consisting of (1) IGCC construction optimization (\$6 million); (2) syngas cooler fouling prevention (\$4 million); (3) fundamental gasification modeling (\$4 million); (4) startup and shutdown optimization (\$2 million); (5) HAPS characterization (\$2 million); (6) advanced instrumentation and controls (\$4 million); and (7) trace metals balance and detection (\$3 million).

Water Management (Innovations for Existing Plants).—Large amounts of water are needed to produce or extract energy, and large amounts of energy are needed to treat or transport water. What is more, CO₂ 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. Yet DOE requested no new funding for the water management subprogram under the

Innovations for Existing Plants program in fiscal year 2011. GE believes that funding for water R&D should be provided in the amount of \$40 million for innovative water reuse technologies and demonstration projects including: cooling tower blow-down reuse, Flue Gas Desulphurization (FGD) 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.

Clean Coal Power Initiative (CCPI).—The CCPI plays a vital role in validating and testing advanced technology. The significant number of applications in response to the CCPI-3 solicitation demonstrates industry's interest in undertaking CCS-related coal projects. DOE should move forward with a new CCPI-4 solicitation. Any future CCPI solicitations must acknowledge current economic realities, including constriction in the capital markets and the difficulty that utilities have in justifying rate recovery for any non-compulsory additional capital or operating cost. DOE should (1) increase emphasis and evaluation weighting on the financial viability of projects; (2) tailor technical requirements so that they do not compromise financial viability; and (3) structure the program so that sufficient time and funding are available to complete front-end engineering designs (FEEDs) and sequestration site characterizations and access evaluations. The latter will allow 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 Turbines.—GE recommends funding of \$45 million in fiscal year 2011 to maintain needed progress in the Advanced Turbines program for the development of enabling technologies for high efficiency hydrogen turbines for advanced gasification systems with carbon capture. The program is on target to enable future advanced coal-fueled IGCC power plants to offset much of the performance penalties associated with carbon capture while also achieving very low NO_x emissions.

In addition, in view of the significant role that natural gas fired generation will play in a low carbon energy future, Congress should support efforts to develop technologies to drive efficiency in new turbines and the Nation's existing gas turbine fleet, as proposed in H.R. 3029 and S. 2900. GE urges the subcommittee to consider an annual investment of \$85 million as envisioned in this legislation. Efficiency improvements from implementing technology on new advanced turbines or retrofitting existing gas turbines will result in reduced emissions and reduced CO₂ for the same power output.

Nuclear Energy: New Plant Activities and Loan Guarantees.—Although there has been significant interest in new plant development, only a fraction of the utilities that applied for Combined Operating Licenses (COLs) in the United States are proceeding with new plant projects on their original timelines. GE Hitachi Nuclear Energy (GEH) commends DOE for the highly successful NP2010 program to license and assist in the development of standardized advanced plant designs, but more needs to be done. In particular, GEH supports the President's call to significantly grow the nuclear loan guarantee program, as it underscores the benefits of nuclear power while addressing the capital-intensive nature of nuclear plant deployment. Congress should provide the requested \$36 billion in loan guarantee authority for nuclear power projects in fiscal year 2011, and should also recognize that providing loan guarantees for other advanced nuclear technologies is critical to ensuring a competitive landscape in the United States. GEH recommends that the new Nuclear Energy Enabling Technologies (NEET) program be expanded to address near term challenges such as domestic nuclear manufacturing capabilities, simulation and training programs to support near term deployment of generation III+ reactor designs, and the application of advanced modularization and construction techniques to help reduce new plant capital costs. The Reactor Concepts RD&D and Fuel Cycle R&D requests are both critical for the deployment of new technologies such as PRISM and Global Laser Enrichment (GLE), and GEH believes that the programs should be provided sufficient funding.

Non-proliferation and Spent Fuel Minimization.—GEH supports used nuclear fuel recycling as a means to fully close the nuclear fuel cycle, minimize nuclear proliferation risks and provide an alternative to a large permanent repository. It is in the best interest of national security that U.S. technology be used to close the fuel cycle in a manner that does not result in separated plutonium. GEH looks forward to working with the Blue Ribbon Commission on America's Nuclear Future and the Congress to discuss ways to address fuel cycle challenges and to support the further development of advanced small modular reactors like GEH's PRISM reactor.

International Nuclear Energy Cooperation.—As interest in civil nuclear power grows around the world, it is critical that the United States lead in efforts to insure that the industry grows in a responsible manner. DOE must have resources to support President Obama's call for a new framework for civil nuclear cooperation. GEH supports the funding request to initiate this new program.

RE-ENERGYSE/Workforce Development.—GEH applauds the recognition that the Government can be a partner in encouraging students to pursue careers in clean energy. GEH is a strong supporter of the industry program for a uniform nuclear curriculum and also has a Nuclear Maintenance Technicians Program with the local community college. These kinds of programs are critical to our continued development of the next generation of nuclear workers.

Electricity Delivery and Energy Reliability: Clean Energy Transmission and Reliability.—GE strongly supports the inclusion of funding for R&D on the dynamic analysis capability of a phasor measurement unit (PMU)-based network in the Transmission Reliability and Renewables Integration subprogram. When coupled with power electronic devices, phasor data can provide grid operators with the capability to rapidly respond to and correct power quality problems. Government investment in PMU-based networks can significantly improve the ability of grid operators to maintain reliability, particularly as operators face the need to integrate increasing amounts of intermittent generation.

GE commends DOE for establishing the new Advanced Modeling Grid Research subprogram. 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 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. In addition, GE views as essential DOE's continued support for ongoing efforts to establish smart grid standards through the National Institute of Standards and Technology.

GE is concerned that the Power Electronics subprogram emphasizes basic science over technology application. GE recommends that Congress provide support for DOE to conduct research into applications of power electronics to support smart grid technologies.

Energy Storage.—While GE supports further research into energy storage technologies, we are concerned that this program places disproportionate emphasis on lithium-ion battery technology. Industry has conducted a great deal of research and development into a range of advanced battery technologies, including sodium-metal-halide, zinc bromide, and vanadium redox. To foster further innovation in this promising field, GE recommends that the focus of the energy storage program be broadened to encompass a range of battery storage chemistries and technologies. The program should cover all potential storage modalities, including flywheel technology.

Cyber Security for Energy Delivery Systems.—GE recommends that Congress restore funding to the fiscal year 2010 level, and that DOE, to support smart grid deployment, determine the most appropriate next-generation communications and control system technologies, as well as the cyber security requirements for each.

PREPARED STATEMENT OF THE BIOMASS ENERGY RESEARCH ASSOCIATION

SUMMARY

This testimony pertains to fiscal year 2011 appropriations for biomass energy research, development, and demonstration (RD&D) conducted by the Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE), Biomass Program (OBP). This RD&D is funded by the Energy and Water Development bill, under Energy Supply and Conservation, Energy Efficiency and Renewable Energy. BERA recommends a total appropriation of \$360 million in fiscal year 2011 for Biomass and Biorefinery Systems R&D. This is an increase of ~\$140 million over the U.S. Department of Energy request for fiscal year 2011 for this programmatic area. Specific lines items are summarized below (also see Table 1).

- \$30 million for Feedstocks (regional partnerships, high yield feedstocks, simpler/cheaper algae routes).
- \$130 million for Conversion Technologies, distributed as follows:
 - \$50 million for Biochemical Conversion (emphasis on low cost sugars, advanced fuels, traditional plus non-traditional conversion routes, e.g., aqueous processing, chemical catalysis).
 - \$80 million for Thermochemical Conversion (conversion to oils, long chain hydrocarbons, or other fuels/intermediates via pyrolysis, gasification, and non-traditional routes; low cost reactive intermediates such as CO and hydrogen).
- \$100 million for Integrated Biorefineries. (Systems integration, risk reduction through technology demonstrations, sustained support for first-of-a-kind projects).
- \$20 million for Sustainability and Analysis to assess life cycle impacts.
- \$80 million for Biopower for pilot scale RD&D on decentralized applications; studies to assess cost, environmental impacts, and permitting issues; RD&D to address performance and other issues for larger scale boiler repowering.

BACKGROUND

On behalf of BERA's members, we would like to thank you, Mr. Chairman, for the opportunity to present the recommendations of BERA's Board of Directors for the high-priority programs that we strongly urge be continued or started. BERA is a non-profit association based in the Washington, DC area. It was founded in 1982 by researchers and private organizations conducting biomass research. Our objectives are to promote education and research on the economic production of energy and fuels from biomass, and to serve as a source of information on biomass RD&D policies and programs. BERA does not solicit or accept Federal funding.

TABLE 1.—FISCAL YEAR 2011 BIOMASS & BIOREFINERY SYSTEMS R&D, ENERGY SUPPLY & CONSERVATION, DOE/EERE BIOMASS PROGRAM

[In millions of dollars]

Program Area	Description of RD&D	Total
Feedstocks	Regional feedstock partnerships Research to improve energy crops, including super high yields: achieve 10 to 25 dry tons/acre/year via R&D compared with the 2 to 7 dry tons/acre/year possible today. Plants species amenable to thermochemical (e.g., high lignin) and biochemical (e.g., more easily processed lignin) processes. Simpler, less expensive algae production.	30.0
Conversion Technologies: Biochemical.	Conversion to next generation biofuels/processes (broader range of liquid fuels beyond ethanol). Reduction of sugar costs through cheaper enzymes and other routes. Non-traditional technologies such as aqueous phase processing, chemical catalysis.	50.0
Conversion Technologies: Thermochemical.	Next generation biofuels and processes that can use a range of feedstocks (pyrolysis, gasification, other routes). Low cost reactive intermediates such as CO and hydrogen. Synthetic routes to expand beyond Fischer-Tropsch fuels.	80.0
Integrated Biorefineries	Risk reduction through demonstrations of biochemical and thermochemical conversion technologies in biorefineries, sustained support for first-of-a-kind projects, and underwriting of loan guarantees.	100.0
Analysis and Sustainability	Life cycle analysis of new technology pathways Land use issues.	20.0
Large Scale Biopower	RD&D at pilot scale for decentralized biopower applications Studies to analyze cost, permitting, and environmental issues.	80.0
TOTAL	360.0

There is a growing urgency to diversify our energy supply, develop technologies to utilize indigenous and renewable resources, reduce U.S. reliance on imported oil, and mitigate the impacts of energy on climate and the environment. The benefits are many—economic growth, new American jobs, enhanced environmental quality, and fewer contributions to climate change. Economic growth is fueled and sustained in large part by the availability of reliable, cost-effective energy supplies. A diversified, sustainable energy supply is critical to meeting our energy challenges and

maintaining a healthy economy with a competitive edge in global markets. Biomass can diversify U.S. energy supply in several ways:

- Biomass is the single renewable resource with the ability to directly replace liquid transportation fuels.
- Biomass can be used as a feedstock to supplement the production of chemicals, plastics, and materials now produced from crude oil.
- Gasification of biomass produces a syngas that can be utilized to supplement the natural gas supply, generate electricity, or produce fuels and chemicals.
- Biomass can be used directly or in combination with coal to diversify our electricity supply.

While biomass will not solve all our energy challenges, it can certainly contribute to the diversity of our supply, and do so in a sustainable way, while minimizing impacts to the environment or climate. Goals could be to reach at least the 10 percent to 15 percent levels in both the electricity generation and motor vehicle transportation sectors by the 2020 to 2030 decade, up from the 1 percent to 25 percent levels today in these two sectors. Unlike solar and perhaps wind, biomass will be constrained to far below 100 percent, due to land use and water availability concerns. However, biomass can be developed from a minor role to a major role in a diversified, domestic and renewable energy supply for the United States, based on an expansion of our Nation's agriculture and forest products industries. The Energy Independence and Security Act (EISA) of 2007 mandates increased use of alternative fuels, with a substantial portion to come from cellulosic biomass. A Federal Renewable Portfolio Standard (RPS) is now under consideration (many States have already passed such legislation) which would increase the use of renewables for electricity, including biopower. To meet the EISA goals and potentially a Federal RPS will require aggressive support for RD&D to move technology forward and reduce technical and economic risk.

OVERALL BERA RECOMMENDATIONS FOR US DOE/EERE BIOMASS RD&D

- Pursue a Balanced Approach to Biomass R&D [All R&D Areas].*—It is important for DOE to pursue a balanced approach to biomass R&D. This means striking a balance between the involvement of national labs, academia, and industry to take advantage of their distinctive strengths, rather than relying heavily on national laboratories, as in the past. The DOE should also pursue a balance between understanding fundamentals, advancing the technology, applying the technology, and integrating the technology. There has been a particular neglect of understanding fundamentals to provide a technology platform that would catalyze development of better technologies and enhance commercial success. Technology breakthroughs are needed because the scale (large) and the costs (too high) are barriers for the technology development pathways needed to meet today's energy and climate challenges. Mechanisms are needed to ensure that fundamental research and new processes and science get into the hands of the companies most likely to deploy the breakthroughs.
- Make Investments to Bring Down the Cost of Sugars From Biomass [Biochemical and Thermochemical Conversion R&D].*—One key to competitiveness is reducing the cost of producing reactive intermediates from biomass. For biological systems, this means getting low cost sugars, as expensive sugars result in expensive products whether the product is ethanol or an advanced, infrastructure-compatible (drop-in) fuel. Making a drop-in fuel from expensive sugars is a pathway for failure. Similarly, for thermochemical approaches, the key is getting low cost reactive intermediates such as CO and hydrogen. The balance advocated in Item 1 can help reduce the cost of making such intermediates. Include advanced biological routes that better integrate simplified combined biological methods with pretreatment to reduce enzyme costs dramatically, as enzymes followed by pretreatment are the major cost items that are susceptible to change.
- Provide Support for Both Traditional and Non-traditional Conversion Routes [Conversion Technologies].*—We recommend that while both biological and thermochemical processes be funded, greater emphasis should be given to thermochemical conversion for transportation fuels and substitutes for other petroleum-derived products to mitigate our dependency on imported oil. Thermochemical technology has been historically under-funded despite its potential to produce more infrastructure-compatible fuels. Biofuels R&D should be expanded beyond just ethanol and Fischer-Tropsch products. We advocate funding for chemical catalysis (rather than just fermentation) to broaden the spectrum for products from sugars; new catalysts and synthetic routes are needed. In addition to the traditional focus of biological and thermochemical routes, it

is important to support new emerging technologies such as aqueous phase processing of biomass to diesel and jet fuel substitutes.

- Reduce the Risk of New Fuel Production Technology Via Demonstrations, Loan Guarantees, and Sustained Support for First-of-a-kind Projects [Integrated Biorefineries].*—It is important that DOE and the Congress understand the substantial challenges of introducing new fuel production technology, particularly in a market with large swings in prices. A fortune can be made when oil prices are high—and twice as many fortunes lost when they drop. A key approach is for DOE to “buy down” risk in a meaningful way to compensate for the huge fluctuations, and enable a few first-of-a-kind projects to succeed. DOE must also provide sustained support and avoid dropping projects prematurely. Technology demonstrations reduce technical and economic risk and accelerate the potential for private investment. A high level of guarantee is vital—as introducing any new fuel in today’s petroleum-heavy market is extremely challenging. The capital costs for petroleum processing are paid off, making it a cash producer, while a biofuels facility must cover not only cash costs but make a high return on capital to compensate for first time risk. This is a heavy lift for first-of-a-kind technology.
- Pursue Simpler and Less Expensive Systems for Utilizing Algae [Feedstocks].*—Much simpler and less expensive systems are needed, especially to harvest algae. This technology advancement should be pursued before other any new large scale projects are initiated.
- Increase Support for High Yield Feedstocks.*—The cost efficient production and handling of energy crops—which is necessary for any significant impact on our national needs—continues to be a major cost and issue. However, it historically has been given a disproportionately small portion of funding.
- Conduct RD&D to Enable Greater Use of Decentralized Biopower.*—A substantial increase over the requested \$50 million should be made to support hands-on, applied RD&D to accelerate use of biopower. The bulk of these funds should go to RD&D rather than paper studies. Research activities of at least a pilot scale are a priority. While expensive, these are where the real path to commercialization happens. Biopower RD&D activities should emphasize decentralized generation (5–50 MW), which plays to biomass’s strengths (flexibility in delivery, broad applicability, localized/sustainable power) and environmental benefits (less transmission lines, less fuel hauling, less intrusiveness, more efficient/CHP). Biomass can also be pursued for centralized generation (large power) as a strategy for reducing greenhouse gases, and may be more attractive than other renewables as it is readily available and can be combusted much like coal. Large power uses may have a role for building biomass fuel supply infrastructure via fuel supplies developed locally with low capital cost because the coal plant is already built. RD&D could potentially focus on performance issues related to re-powering boilers with biomass.
- Conduct Studies Needed to Assess Cost, Permitting, and Environmental Issues Related to Biopower.*—Studies are needed to inform industry, Congress, and the general public, but should not be the primary focus of biopower efforts. The cost and time for permitting of plants is already a significant factor in biomass industrial use and is growing. Permitting processes should be reviewed with a goal of facilitating industry growth by making permitting as simple, quick, and reasonable as possible. Regulators and companies need to be confident that they can obtain permits for biomass power or fuel plants. A scoping study of potential technologies meeting near-term scale-up potential or useable in retrofitting existing facilities could be useful, if it facilitates permitting or building of plants or retrofits. Detailed cost estimates for potential power generation and biomass conversion facilities could stimulate serious consideration from the business community raise awareness of successful DOE projects. Assessment of potential GHG emission reductions is needed to clarify the impacts on fossil energy and fossil CO₂ that result from biomass crops, harvesting, energy from forests, etc., and moving to power plants. The goal is a fair net CO₂ and net energy reduction value compared to fossil alternatives.
- Leverage Results From Existing/Ongoing Work on Biomass to Support Biopower Efforts.*—Cost-benefit analysis on feedstock type and delivery systems, for example, is not entirely unique to power and similar studies conducted for biomass feedstocks and biofuels can be leveraged to understand the biopower landscape.

PREPARED STATEMENT OF THE UNIVERSITY OF TEXAS AT AUSTIN
 CONTINUE FUNDING FOR U.S. DEPARTMENT OF ENERGY (DOE) OIL AND GAS RESEARCH
 PROGRAMS, INCLUDING RPSEA (EPACT SECTION 999)

I appreciate your leadership efforts and support for oil and natural gas research. I urge you to continue to support and grow important fossil energy research and development (R&D) in the fiscal year 2011 Energy and Water Appropriations bill.

The President's fiscal year 2011 budget request to Congress recommends repeal of section 999 of the Energy Policy Act of 2005 (EPACT), which funds RPSEA, the industry-led research consortium. The President's budget also recommends elimination of the (already paltry) DOE Office of Fossil Energy budget for oil and gas R&D.

Although I can, perhaps, understand the political underpinnings of these administrative recommendations, I find the recommendations to be short-sighted and hard to reconcile with the stated and real needs of our Nation. These needs include, but are not limited to: (1) access to vital energy as we try to recover from a recession and the largest increase in deficit spending ever; (2) energy to get the U.S. economy back on its feet; (3) access to increased domestic energy for national security; (4) keeping and adding (non-government) American jobs, such as those the domestic energy industry provides; and (5) science and technology innovation in fossil energy in U.S. universities.

I have been engaged in energy production and research for nearly three decades. In the past 2 years, I have visited many of the premier energy locations and facilities:

- Hydro in Norway
- Wind in Denmark and West Texas
- Geothermal in Iceland
- Solar in Spain and California
- Biofuel in the United States
- Carbon sequestration in the United States
- Liquefied natural gas (LNG) in Qatar and shale gas in the United States
- Oil in the Middle East and the United States
- Nuclear in France and the United States

During these visits I have met one-on-one with industry, government, and academic leaders, including:

- CEO of BP, London
- CEO of Statoil, Norway
- CEO of Chesapeake, Oklahoma
- CEO of BP Capital, Dallas
- CEO of RasGas, Qatar
- CEO of Kuwait Energy
- CEO of Abengoa Solar, Spain
- CEO of Renewable Energy Corporation, California
- Deputy CEOs of Kuwait Oil and Bahrain Petroleum
- President of Denbury, Texas
- Vice President of Shell Offshore, Louisiana
- Director of MIT Energy Initiative and former U.S. Under Secretary of Energy
- Director of U Texas Energy Institute and former U.S. Under Secretary of Energy
- Director of Energy Institute at Stanford
- President of Iceland
- U.S. Under Secretary of Energy
- Minister of Oil, Bahrain
- Director of the OECD Nuclear Energy Agency, Paris
- Deputy Director of the IEA, Paris
- Leading scientists and engineers across several energy sectors

Perhaps most important from these visits, I have learned that there are no silver bullets in energy. We cannot turn off coal and switch on solar. We cannot turn off natural gas and turn on wind. To imply otherwise is disingenuous. Innovation in renewable energy is exciting and as the decades unfold these sources of energy will improve, address the intermittency, storage, cost, energy density, storage and transmission challenges, and become more prevalent! Meanwhile, nations have and will continue to use "the energy they have, where they have it," and thus the transition to a non-fossil-fuel future will take many decades and will be unevenly distributed among developed, developing, and undeveloped nations. It is not a matter of political will but rather a matter of economics, scale, infrastructure, access, thermodynamics, and kinetics.

Many large and developing nations continue to ramp up their acquisition and use of fossil fuels. This is a reality. Philosophical hope notwithstanding, the United States is getting its tail whipped as the National Oil Companies (e.g., PetroChina, Petrobras, Petronas, Total, Statoil, ARAMCO, and others) build on their own national resource base and strong government support to become major international players. At the same time, the few surviving International Oil Companies (ExxonMobil, Shell, BP, Chevron, and ConocoPhillips) struggle to compete, as evidenced by layoffs in the past year and continued mergers and acquisitions. Combined, the public companies of the world control less than 10 percent of world oil reserves. Read and digest that line again, and then think about U.S. security and the health of the economy as we attempt to transition into the future.

Energy research is vital to stay competitive and meet the energy needs of our Nation. That includes research in fossil energy, which together supply ~85 percent of our energy demand. Research is needed in areas such as unconventional oil, unconventional gas, carbon sequestration, extreme environment (Arctic, deep water, subsalt, subvolcanic, etc.) conventional oil and gas, and nanotechnology applications in oil and gas, to name just a few.

Policy makers need to get past the notion that research support of fossil energy should only be supported privately. That notion is politically motivated, and to continue to promulgate it is hurting our Nation. Federal-private partnerships are everywhere and just as important in fossil energy as they are in renewable energy, biotech, pharmaceuticals, agriculture, or high tech. U.S. universities are woefully under funded with regard to Federal support for fossil energy. We are naively and idealistically giving away the U.S. science and engineering advantage in fossil energy research. To what end?

I strongly support increasing DOE oil and gas research funding. This includes the RPSEA program, which has been instrumental in providing Federal support of crucial research in unconventional onshore natural gas and ultra-deepwater oil and gas, both of which are critical to U.S. energy security (affordable, available, reliable, and clean). RPSEA provides competitive grant monies to universities, which in turn leverage those monies significantly by partnering with industry. DOE fossil energy used to have a similar program—when they had a budget. I cannot say it emphatically enough: A real budget needs to be reinstated! Students and faculty benefit directly from research funding and from the insight they each can gain from working on these research projects. Unfortunately, this kind of research is not supported by NSF or other blue-sky programs.

Both DOE fossil programs and RPSEA provide tremendous value to our country, creating and supporting jobs and increasing technology development for small and independent companies. Independent companies are the drivers behind the dramatic increase in natural gas reserves that the United States is enjoying today. Although they lack research facilities and staff, they are voracious fast-adapters of useful technology. Thus, the Federal investments we make in research funding are paid back many times over.

A few final thoughts as you consider this important decision:

- Developing nations (China, India) are aggressively pursuing and acquiring energy and other resources around the globe. Ignoring our huge domestic fossil energy resource base is tantamount to capitulation on an international scale.
- The United States should be conducting resource assessments of all of its continental shelf areas, and we should encourage energy companies to pursue these resources. Companies are willing to make the huge capital outlays required to explore and develop resources safely and cleanly, if they are allowed to do so. The consumer and the Nation will reap the benefits, and the environmental track record in the offshore is impressive and well established.
- Hydraulic fracturing has been the key to the resurgence of gas production and reserves in the United States in recent years. This technology is not new—it has been in use for over 50 years in hundreds of thousands of wells—but it has recently been refined for maximum impact in unconventional gas systems, particularly in horizontal wellbores. Hydraulic fracturing has a safe and environmentally clean track record. Claims to the contrary are unsubstantiated or fabricated and should be challenged at every opportunity.

I understand Congress' budget constraints, but it is essential to maintain a robust fossil energy R&D program aimed at maximizing our domestic fossil-energy resources. Natural gas development should be at or near the top of the list of the Nation's priorities. New and promising areas of natural gas development, such as the Barnett, Bakken, Marcellus, Haynesville, and Fayetteville shale, have been made possible through advances in technology, many of which were funded through DOE's research efforts and are now augmented by Roseau's efforts.

Your support of fossil energy oil and natural gas R&D programs, as evidenced by continuing funding for RPSEA (EPACT section 999), provides the resources to power America's economic recovery, the new workforce to do it, and a solid energy foundation for the future.

PREPARED STATEMENT OF THE UNIVERSITY CORPORATION FOR ATMOSPHERIC RESEARCH (UCAR)

On behalf of the University Corporation for Atmospheric Research (UCAR) and the larger 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, and Related Agencies. DOE's programs and initiatives in science and education directly support university and laboratory communities. They are also key to building a broad-based national resiliency to handle the great challenges of the future, including climate change. DOE is on the frontlines building the capacity needed to address these challenges, maintain a competitive advantage for the United States internationally, and secure an economically and environmentally sustainable future.

For these reasons, I urge the subcommittee to fund the President's full fiscal year 2011 budget request for the DOE Office of Science at \$5.121 billion and the Office of Energy Efficiency and Renewable Energy (EERE) at \$2.355 billion. Furthermore, it is critical that the subcommittee take every step to ensure that the DOE's Science budget stays on track to double this decade, as authorized by the America COMPETES Act of 2007.

UCAR is a consortium of 75 universities that manages and operates the National Center for Atmospheric Research (NCAR) on behalf of the National Science Foundation and the university community. UCAR and NCAR serve as national hubs for research and education for the atmospheric and Earth system sciences community. UCAR also houses community programs that bring geosciences communities together to address large-scale, integrated research and education challenges. Our mission is to better understand the behavior of the atmosphere and related global systems and to help communities, States, and nations use this information to sustain and improve life on Earth.

I applaud the DOE's ongoing leadership in the management of programs to develop clean, alternative sources of energy, enhance national security and independence from foreign oil, address climate change, and educate the workforce for the emerging global clean energy economy. With the following, I specifically want to highlight several science research and education programs that represent the DOE's critical investments toward a more resilient and adaptable society.

CLIMATE AND EARTH SYSTEM RESEARCH

The Office of Biological and Environmental Research (BER) within the DOE Office of Science makes fundamental contributions to the Nation's premier climate and Earth system models. Such models provide the scientific foundation for national and international decisionmaking on climate change—how we should respond to climate change, whether we should adapt or mitigate, etc.

In particular, BER provides indispensable support to the Community Climate System Model (CCSM), which is being released this year in its fourth major iteration for use in the U.N. Intergovernmental Panel on Climate Change's (IPCC) Fifth Assessment Report, expected for release in 2014. A comprehensive and sophisticated model for analyzing Earth's past, present, and future, CCSM contributed the most simulated data of any global model to the IPCC's 2007 Fourth Assessment Report. It is providing decisionmakers around the world with a clearer picture of what the impact of sustained climate change will be on a global scale.

CCSM is also laying the scientific foundation for higher-resolution, downscaled models which will provide regional and local predictions about the impacts of climate change. This regional, downscaled approach is BER's stated focus for climate and Earth system modeling research in fiscal year 2011. Regional and local predictions will help States, communities, businesses, and individuals develop effective long-term strategies to minimize damages of climate change impacts, by either adapting or mitigating.

Thanks in part to BER support, the Nation's climate models are becoming more realistic, incorporating more precise and complex natural and now human processes that are shaping the global climate. While uncertainties will always persist, these new capabilities will allow the climate science community to address the new class of societally relevant questions in a way that has never been done in the past. CCSM 4, for example, will for the first time feature fully interactive carbon and sul-

fur cycles, as well as dynamic vegetation, aerosol effects on clouds, carbon chemistry, natural carbon sequestration via land surface and oceans, and interactions between the carbon cycle and climate.

Frontiers for climate modeling in fiscal year 2011 include understanding more fully how aerosols affect cloud formation, and in turn radiative forcing, and how modes of natural climate variability (e.g., the El Niño Southern Oscillation, Pacific Decadal Oscillation, and Northern Annular Mode) will change as atmospheric greenhouse gas concentrations continue to increase. Feedback cycles such as high latitude ocean-ice interaction and methane release from Arctic permafrost are also areas of study where scientists still have much to learn and models still need improvement.

Understanding and responding to climate change extends far beyond the capabilities of any one laboratory or agency. This is a broad, interagency effort, in which DOE is a key partner. New contributions to the design and scientific content of CCSM will not come from NCAR alone. While CCSM is housed and managed at NCAR, it is an open source climate model, which means that scientists across the Nation and the world make contributions and improvements.

In order to develop more accurate, increasingly realistic, and higher resolution climate models, with better predictive capabilities for individuals, businesses, and communities, I urge you to fund the Office of Biological and Environmental Research (BER) within the DOE Office of Science at the President's full fiscal year 2011 budget request of \$627.0 million. BER support is critical to the university community's most important and recognized climate modeling work.

ADVANCED SCIENTIFIC COMPUTING RESEARCH

Also within the DOE's Office of Science, 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 research the major scientific questions being addressed by the Office of Science and the larger university community.

ASCR's continued progress is of particular importance to atmospheric scientists involved with climate model development, because an enormous amount of computing power is required to address the interaction of the Earth's systems and global climate change. The complex nature of the climate processes being simulated in climate models requires very advanced software engineering to compute efficiently at the petascale. For this reason, ASCR played a critical role in developing the computing and networking resources for the U.S. contributions to the IPCC Fourth Assessment Report, and ASCR is one of the most important resources supporting the next generation of state-of-the-science climate simulation tools for this country.

Because the complex and high-resolution climate scenarios produced using the CCSM are too processor intensive to be run at NCAR alone, they are outsourced to the DOE's Leadership Computing Facilities, located at Oak Ridge National Laboratory (OLCF), where a 2.33 petaflop system is openly available to the scientific community, and also at Lawrence Berkeley National Laboratory/NERSC, Argonne National Laboratory, and Lawrence Livermore National Laboratory. Last year, scientists at NCAR and the University of Wisconsin used Oak Ridge's OLCF to simulate abrupt climate change and shed new light on an enigmatic period of natural global warming in Earth's relatively recent history. The work was featured in the July 17, 2009 issue of the journal *Science* and provides valuable new data about the causes and effects of global climate change. The scientists used nearly a million processor hours in 2008 to run one-third of their simulation. With 4 million processor hours allocated for 2009–2011, they will complete the simulation, capturing climate from 14,000 years ago to the present and projecting it 200 years into the future.

The results of this research and other research like this are brought to the broader scientific communities through another ASCR program, the Scientific Discovery through Advanced Computing (SciDAC) program. SciDAC facilitates the transfer of basic research efforts into computational science applications through direct partnerships between ASCR-supported applied mathematicians and computer scientists. In the case of climate change, there is a growing demand for the development of tools that will help inform decisionmakers about the options for addressing and adapting to climate change. With computation and simulation, scientists can model what is known about the Earth's systems, identify uncertainties of the models, and determine the observational data and experiments needed to further refine and improve the models.

I urge you to fund the Advanced Scientific Computing Research (ASCR) within the DOE Office of Science at the President's full fiscal year 2011 budget request of \$426.0 million. ASCR provides critical processor capacity and computational tools

like SciDAC that are essential to predictive climate change research at high resolutions and over large time scales.

WORKFORCE DEVELOPMENT FOR TEACHERS AND SCIENTISTS

The DOE Office of Science's education programs, like the Workforce Development for Teachers and Scientists (WDTS) Program, are also essential to strengthening our Nation's resilience to modern challenges like climate change. DOE is taking a leadership role in educating and training the Nation's science, technology, engineering, and mathematics (STEM) workforce and facilitating the development of the knowledge and expertise that will prepare us to address energy and environmental challenges.

WDTS aims to recruit and train a pipeline of highly skilled and diverse STEM workers to meet our Nation's innovation and competitiveness challenges. To this end, WDTS sponsors workforce training and education programs, often based at DOE's national laboratories, that motivate students and educators to pursue careers that will contribute to both basic and applied science.

WDTS has also launched the DOE Office of Science Graduate Fellowship Program to support U.S. graduate students pursuing degrees in areas of basic science and engineering, for up to 3 years of study. The goal of the Fellowship 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 success in the 21st century.

I urge you to fund the Workforce Development for Teachers and Scientists (WDTS) program within the DOE Office of Science at the President's full fiscal year 2011 budget request of \$35.6 million. We must ensure that the next generation workforce is better prepared to address growing energy and environmental challenges.

RENEWABLE ENERGY R&D

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, transforming the clean energy economy, decentralizing the energy market, providing new high-tech jobs, reducing the human toll on the environment, and mitigating global climate change.

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 NCAR partnership with DOE's National Renewable Energy Laboratory (NREL) and the regional utility company, Xcel Energy, to develop sophisticated wind 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.

Given the critical importance to the Nation of developing economically and environmentally sustainable technologies for producing energy, I recommend that the subcommittee fully fund the President's fiscal year 2011 budget request for the Office of Energy Efficiency and Renewable Energy at \$2.355 billion.

RE-ENERGYSE (REGAINING OUR ENERGY SCIENCE AND ENGINEERING EDGE)

Within the Office of Energy Efficiency and Renewable Energy (EERE), RE-ENERGYSE is a broad educational effort designed to inspire students and workers to study and pursue careers in science, engineering, and entrepreneurship related to clean energy. Today at U.S. universities, opportunities to pursue clean energy education are far and few in between. RE-ENERGYSE will help universities and community colleges develop cutting edge programs, with redesigned and new curricula to produce tens of thousands of highly skilled U.S. workers who can sustain American excellence in clean energy in industry, trades, academia, the Federal Government, and national laboratories.

RE-ENERGYSE will also benefit from plans to partner with the National Science Foundation for program evaluation. This partnership will build on the scientific and

engineering expertise of both agencies in the energy field and benefit from NSF's successful track record of integrating research with education in programs it has developed and administered over the past two decades.

I urge the subcommittee to fund RE-ENERGYSE at the President's fiscal year 2011 request of \$50.0 million.

I want to thank the members of the subcommittee for their continued leadership in supporting basic and cutting-edge scientific research and in promoting education and workforce development in the environmental and other Earth sciences.