

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR 2014

HEARINGS BEFORE A SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS HOUSE OF REPRESENTATIVES ONE HUNDRED THIRTEENTH CONGRESS FIRST SESSION

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PART 9 WITNESSES



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Outside Witness Testimony Submission
Statement of John Howes, Senior Policy Advisor, and Boris Monahov, PhD., Program Manager
Advanced Lead-Acid Battery Consortium, Durham, North Carolina
House Appropriations Subcommittee on Energy & Water Development
March 28, 2013

The Advanced Lead-Acid Battery Consortium (ALABC) is pleased to provide the House Appropriations Subcommittee on Energy and Water Development our views on the US Department of Energy's advanced battery research and development programs.

The ALABC represents more than 60 companies and institutions from 23 countries worldwide, including 23 in the U.S., engaged in the research, development, production and recycling of lead-acid batteries used in a variety of transportation and stationary applications. Sales of lead-acid batteries exceed 75 per cent penetration in the North American automotive market. Based on market analyses, as well as on the results of our battery R&D programs, we expect that strong presence to be maintained for many years to come.

Our comments are intended to elaborate on remarks by several Members at the March 5, 2013 hearing before this subcommittee, specifically those of the ranking Member, Ms. Marcy Kaptur, who discussed the need for greater collaboration between DOE and other federal agencies on several issues to, as she said, "prevent duplication" among various agencies. The ALABC supports these observations. We believe that in an era of constraints on the federal government's budget, every effort should be made to ensure that any duplication be avoided and eliminated.

The avoidance of duplication, however, is but one important objective of any collaborative process. We would like to offer another for your consideration. A collaborative process should also have a companion objective of preventing the work of one program from creating or magnifying unintended consequences for another.

We believe the potential exists for the work in the DOE's advanced battery programs to unintentionally exacerbate solid waste disposal risks under the purview of other federal agencies such as the Environmental Protection Agency. Specifically, there are potential risks to the environment from the disposal of lithium batteries since the total life-cycle profile (production-operation-recycling-production) of these batteries lags behind that of other battery chemistries, particularly lead-acid.

We wish to emphasize that in no way are we suggesting that DOE is unaware of such sustainability issues. In fact, Argonne National Laboratory (ANL) has been doing excellent

work, including a 2010 study examining and profiling the sustainability and life-cycle costs of various battery chemistries.¹

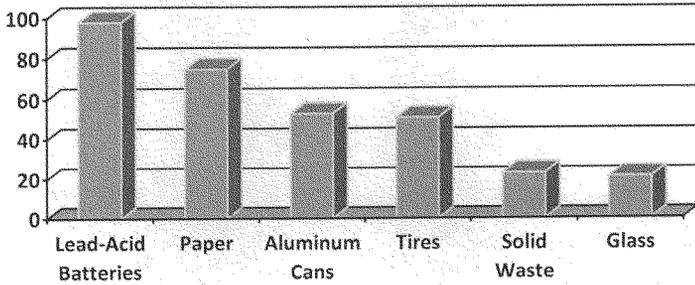
Rather, we hope that as DOE follows the suggestion of your colleagues to strengthen collaborative efforts with other agencies, such collaboration will place greater emphasis on the need for sustainability in the research and development of any lithium battery design. In this regard, we offer the experience of the lead-acid industry as an example, or “benchmark,” for our colleagues engaged in the research and development of other advanced batteries.

While the electrochemistry of the battery designed by Gaston Planté in 1869 remains essentially the same today, there nonetheless have been dramatic, major improvements within the design that have helped the lead-acid battery industry maintain its position as the best-selling chemistry in the rechargeable battery market. Lead-acid batteries have several unique qualities:

- Excellent cranking ability at very low temperatures.
- The life-span of lead-acid batteries in mild hybrid electric vehicles and renewable energy storage has increased dramatically to the point where our industry can now produce batteries that perform at least as well as nickel metal hydride batteries in high-rate partial state of charge operation, but at a fraction of the cost. In fact, DOE has helped fund several studies of advanced lead-acid batteries and we look forward to further collaboration.
- The recycling rate of lead-acid batteries is over 95 per cent, far higher than any other commercial product. Not even aluminum cans, tires or paper products are recycled at a comparable rate.
- Lead-acid’s sustainability helps to ensure that most materials used in the production of new batteries come from domestic resources. Most of the cobalt, special graphite, lithium and rare earth metals used in lithium batteries must be imported.

¹ Sullivan and Gaines, A Review of Battery Life-Cycle Analysis, ANL/ESD/10-7, 2010

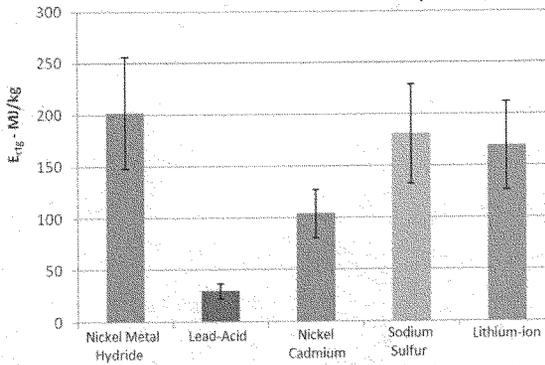
2004-2009 Reclaimed Materials Recycling Rates



Source: Smith Bucklin, 2009

The ANL study referenced above notes the fact that the high rate of lead-acid recycling contributes to their low cost since the amount of energy required to recycle battery components is considerably lower than the energy required to process virgin materials. According to ANL, this sustainability of lead-acid results in a life-cycle, cradle-to-gate cost analysis is far below that of lithium-ion, nickel-cadmium, sodium sulfur and nickel metal hydride. (ANL notes a similar comparison of the amount of CO₂ emitted during the production of each pound of battery).

"Cradle to Gate" Energy Consumption in Material Production Loop



Source: Sullivan and Gaines, A Review of Battery Life-Cycle Analysis, ANL/ESD/10-7, 2010

In fact, it is precisely because of sustainability that lead-acid batteries have achieved an impressive cost advantage over competing chemistries. While lithium-ion batteries have outstanding performance test records and a strong future in the marketplace, we submit that

lithium-ion batteries would greatly benefit if sustainability were to be mandated in their design rather than something optional to be ignored.

The recycling of a lithium-ion battery is still an immature, expensive process and battery producers largely prefer to use materials from virgin sources. In contrast, lead-acid battery recycling is a profitable business and manufacturers find that materials from a recycling process are less expensive than materials from virgin resources.

The lithium-ion battery packs in various plug-in hybrid and all electric vehicles were not designed to be conveniently placed into a recycling process. In addition, the recycling of lithium batteries is not mandated by EPA in either its hazardous or universal waste disposal programs.² By contrast, all lead-acid batteries are easily recyclable by secondary smelters in the U.S. that operate in full compliance with strict standards administered by the EPA.

The risk, therefore, is that as the use of lithium batteries in hybrid or all-electric vehicles continues to increase, so will the risk of spent batteries ending up stacked in warehouses or simply disposed of in landfills. Lithium batteries that are neither protected nor recycled pose risks to the environment.

DOE, EPA, the Department of Transportation and other federal agencies are fully aware of these risks and have an impressive body of research that readily explains them. But, the need for total end-of-life sustainability in the design of lithium batteries warrants higher priority attention within DOE and enhanced collaboration with EPA and other agencies.

Therefore, we strongly encourage Congress to take up the suggestion of Ms. Kaptur and your other colleagues and direct the various agencies with battery development in their portfolios to (1) create a more formalized inter-agency process and (2) require that product sustainability be given at least equal weight to the goal of avoiding any programmatic duplication.³

We thank you for your consideration and will be pleased to provide further information.

² In the 112th Congress, S. 948, the “Promoting Electric Vehicles Act,” contained a provision to prohibit the disposal in landfills of advanced batteries used in hybrid and electric vehicles. The legislation was not enacted.

³ We note the recent introduction of H.R. 1027, the “Advanced Vehicle Technology Act of 2013,” which contains provisions relating to recycling and inter-agency collaboration.



AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS
Geoscience & Energy Office – Washington, D.C.

Written testimony submitted to:
**House Appropriations Subcommittee on
Energy & Water Development and Related Agencies**
in support of Department of Energy programs

by

Ted Beaumont
President, American Association of Petroleum Geologists

To the Chair and Members of the Subcommittee:

Thank you for this opportunity to provide testimony on the importance and need for strong federal R&D efforts in the fields of oil and natural gas, coal, and geothermal technologies. These activities reside in the U.S. Department of Energy's (DOE) fossil energy program (oil, natural gas, coal), and energy efficiency and renewable energy program (geothermal). They are an essential investment in this nation's energy security.

The American Association of Petroleum Geologists (AAPG) is the world's largest scientific and professional geological association. The purpose of AAPG is to advance the science of geology, foster scientific research, and promote technology. AAPG has over 38,000 members around the world, with nearly two-thirds living and working in the United States. These are the professional geoscientists in industry, government and academia who practice, regulate and teach the science and process of finding and producing energy resources from the Earth.

AAPG strives to increase public awareness of the crucial role that geosciences, and particularly petroleum geology play in energy security and our society.

You are certainly aware of how oil and gas from shales has quickly boosted domestic energy production, adding well-paying jobs, stimulating manufacturing and enhancing U.S. energy security. This energy renaissance would not have been possible without fossil energy R&D, started in the 1970s at the DOE's predecessor agency, the Energy Research and Development Administration (ERDA).

Methane hydrates could well represent the next energy frontier. Methane is the predominant component of natural gas and hydrates in arctic sediments and in sediments of the Outer Continental Shelf hold vast quantities of this potential resource. The DOE fossil energy program began research on methane hydrates in 1997, when methane hydrates were only a scientific curiosity. By the winter of 2011-2012, the DOE, in partnership with ConocoPhillips and Japan Oil, Gas and Metals National Corporation (JOGMEC), successfully completed a research well on the Alaska North Slope to produce experimental quantities of methane from subsurface hydrates.

Building on the lessons learned at the Alaska well, Japan successfully extracted methane from hydrate deposits offshore Japan in early March of this year. Funding of the DOE methane hydrate program at an annual level of \$40 to \$50 million would help move this novel, potential energy source toward commercialization. U.S. scientists lead the world in scientific understanding of this resource and continued federal R&D support will enable us to remain at the forefront of developing this novel resource.

What is frequently misunderstood, however, is that the federal energy R&D investment cannot be solely focused on new and alternative energy sources. Growing domestic production from shales, is resulting in on-going improvements in efficiency and environmental safety. But fully realizing the potential of these resources for the benefit of U.S. consumers requires additional scientific insights and technological breakthroughs. After all, our nation is not facing a choice between existing and new energy sources, although that is often how the energy debate is framed. Instead oil, natural gas, and coal currently supply 82 percent of the nation's energy. These resources are the foundation of our energy future. Upon this foundation we are now developing and deploying new and alternative energy sources.

Our nation's R&D policies must recognize the need to keep this foundation strong while simultaneously investing in the energy sources of the future.

Oil and natural gas technologies program

AAPG strongly urges increased funding for the DOE oil and natural gas technologies programs. They are regularly either targeted for elimination or funded at levels insufficient to conduct necessary field experiments. This is ironic considering oil and natural gas deliver 62 percent of our nation's energy.

Oil supplies the overwhelming volume of all transportation fuels. Natural gas heats homes and businesses, generates electricity, is a chemical feedstock, and is emerging as a potential transportation fuel. Supplying the oil and natural gas consumed today and in the future requires significant technological advancements.

Several commonly overlooked trends in the oil and natural gas sectors support a federal role in oil and natural gas technologies R&D:

1. **The independent oil and gas producer is responsible for finding and producing most U.S. oil and natural gas resources.** According to the Independent Petroleum Association of America (IPAA), a trade association, independent producers produce 54 percent of the nation's oil, 85 percent of the nation's natural gas, and develop 95 percent of the nation's oil and natural gas wells. The median-sized independent producer is the epitome of American small business.
2. Independents typically work on projects that are too small for vertically-integrated "major" oil and gas companies to develop commercially. Technology is vitally important for locating these resources underground, but **these producers do not have the capacity to conduct independent research.**

3. **Increasingly domestic oil and natural gas production is coming from non-traditional (unconventional) resources**, such as the Marcellus Shale of Appalachia or the Bakken formation of the Williston Basin. The Monterey Shale of California is a new, huge but geologically unique resource that will require additional scientific study and new technologies to develop. These resources hold the key to American energy security, but their development requires significant R&D investment.
4. **Federal R&D has historically provided support for the nation's universities and colleges**, which have proven to be a rich source of technological innovation. But as federal support for oil and natural gas technology development has waned, so has the ability to conduct this type of research and train the next generation of U.S. scientists and engineers. There is a serious workforce shortage rapidly approaching both industry and government.

The goal of a robust federal R&D program in oil and natural gas technologies is to enable and encourage the environmentally responsible development of the nation's petroleum resources on behalf of the American people. This includes conventional oil and natural gas, non-traditional resources, and emerging resources, such as methane from methane hydrates, which according to a 2010 study by the National Research Council "could help to provide greater energy security for the United States and to help address future energy needs globally."

We request the Subcommittee on Energy & Water Development and Related Agencies appropriate \$100 million for oil and natural gas technology programs in the Department of Energy's Office of Fossil Energy to support research projects that target increased production of domestic oil and natural gas resources. This funding recommendation assumes that, in addition to the appropriation, \$50 million per year funding for the Research Partnership to Secure Energy for America will continue.

Coal program

The nation's coal resource is essential to U.S. energy security. AAPG supports research and development funding for coal, including clean coal technologies such as carbon capture and sequestration. *AAPG supports \$276 million for these activities, the President's FY 2013 request.*

Again, these investments must be balanced. In evaluating the DOE coal program, I urge you to review the findings of the National Academy's report entitled Coal: Research and Development to Support National Energy Policy, released in June 2007. The study finds that while there are significant uncertainties in U.S. coal reserve and resource estimates, there is sufficient coal at current consumption to last for more than 100 years.

However, there is a real need for more "upstream" coal research to increase our understanding of the nation's resource base. The study group observed that presently over 90 percent of federal R&D spending for coal is on the "downstream" side, focused on utilization, carbon capture and sequestration, and transport and transmission. Only 10 percent goes to resource and reserve assessment, mining and processing, environment/reclamation, and safety and health.

Geothermal energy technologies program

Geothermal energy is an important alternative energy resource that provides base-load power to the nation's electrical grid. Significant expansion of geothermal power production may be possible through the development of enhanced or engineered geothermal systems, but developing and proving these technologies requires R&D investment.

AAPG supported the nearly \$400 million for geothermal energy R&D and deployment in the American Reinvestment and Recovery Act of 2009. *AAPG supports \$65 million for the DOE geothermal program, the President's FY 2013 budget request.*

Summary

Thank you for the opportunity to present this testimony to the Subcommittee. Our nation has the resources and capacity for a bright energy future. Ensuring this future requires prudent investment in R&D to deliver the science and technology needed to supply the conventional energy sources we will rely on in coming decades, and the breakthroughs in new and alternative energy sources that will power the future.

If you have any questions about AAPG or this testimony, please contact Edith Allison, the director of our policy office in Alexandria (phone: 202-643-6533, e-mail: eallison@aapg.org).

**Written Testimony Submitted by
Wilson Bonner and Maeve Boland, Geoscience Policy Staff
American Geosciences Institute
to the U.S. House of Representatives
Committee on Appropriations
Subcommittee on Energy and Water Development Appropriations
March 29, 2013**

To the Chairman and Members of the Subcommittee:

Thank you for this opportunity to provide the American Geosciences Institute's perspective on fiscal year (FY) 2014 appropriations for geoscience programs within the Subcommittee's jurisdiction. These important and modest investments in research and development (R&D) at the Department of Energy (DOE) will help develop and sustain energy resources for economic growth of resilient communities. **AGI strongly supports maintaining the pre-sequestration FY 2012 funding level for the Office of Science at \$4.875 billion. AGI requests support for the Office of Energy Efficiency and Renewable Energy and the Office of Fossil Energy. AGI requests additional support for educating the energy workforce of the future, particularly for the Science Graduate Fellowship Program within the Office of Science's Workforce Development for Teachers and Scientists. This important fellowship program should be funded at the FY12 level of \$5 million.**

AGI is concerned about the limited investments in oil and natural gas R&D within the Office of Fossil Energy. Oil and natural gas supply 62% of our nation's energy and will continue to play a major role in the future. The Office of Fossil Energy suffers from an unbalanced portfolio that focuses primarily on coal and carbon capture and sequestration technology. We ask for the Subcommittee's support for oil and gas, unconventional natural gas, methane hydrates, and carbon sequestration R&D so the nation can develop a diverse portfolio of energy resources while enhancing carbon mitigation strategies to secure clean, affordable, and secure energy supplies for now and the future.

We ask for increased investment in training students and workers for our energy and mining industries. We endorse the recommendation in a recent National Research Council report, *Emerging Workforce Trends in the U.S. Energy and Mining Industries: A Call for Action*¹, that federal agencies should provide increased research funding to universities to ensure enough qualified workers to fill jobs in these critical industries.

AGI is a nonprofit federation of 49 geoscientific and professional societies representing more than 250,000 geologists, geophysicists, and other Earth scientists. Founded in 1948, AGI provides information services to geoscientists, serves as a voice for shared interests in our profession, plays a major role in strengthening geoscience education, and strives to increase public awareness of the vital role the geosciences play in society's use of resources, resilience to hazards, and the health of the environment.

¹ http://www.nap.edu/catalog.php?record_id=18250

DOE Office of Science

The DOE Office of Science is the single largest supporter of basic research in the physical sciences in the United States, providing more than 40 percent of total funding for this vital area of national importance. The Office of Science manages fundamental research programs in basic energy sciences, biological and environmental sciences, and computational science. **AGI asks that you support the Office of Science at the pre-sequestration FY 2012 level of \$4.875 billion.**

The National Research Council's 2013 report, *Emerging Workforce Trends in the U.S. Energy and Mining Industries: A Call to Action*², found that while demand for energy and mining jobs will remain strong for the foreseeable future, there are not enough younger workers in the pipeline to replace the large amount of "baby boomers" expected to retire from industry. AGI's own 2011 report, *Status of the Geoscience Workforce*³, reported similar findings. Therefore, we strongly support investments in geoscience education, training, and workforce development within DOE, especially the Science Graduate Fellowship program within the Office of Workforce Development for Teachers and Scientists, to allow students to complete advanced training and to ensure a skilled workforce in energy-related sciences.

DOE Energy Efficiency and Renewable Energy

Within the Office of Energy Efficiency and Renewable Energy, we support important and modest investments for R&D for many renewable energy resources. **AGI supports the pre-sequestration FY 2012 level of \$38.1 million for the Geothermal Technologies program and greatly appreciates previous support from Congress for this key alternative energy resource.** The geothermal research program within the Renewable Energy account, which funds Earth science research in materials, geofluids, geochemistry, geophysics, rock properties, reservoir modeling, and seismic mapping, will provide the nation with the best research to build a successful and competitive geothermal industry. **AGI supports the newly established Critical Materials Institute** and hopes this hub will consider ways to improve exploration, extraction, and processing of necessary raw materials in addition to research on manufacturing and substitution.

DOE Fossil Energy Research and Development

AGI urges the Subcommittee to provide more balanced support for the Fossil Energy Research and Development (R&D) portfolio in the FY 2014 Energy and Water Development Appropriations bill. Many members of Congress have strongly emphasized the need for a responsible, diversified, and comprehensive energy policy for the nation. The growing global competition for fossil fuels has led to repeated and concerted requests by Congress to ensure the nation's energy security. Funding for oil and unconventional fossil energy R&D will greatly improve our ability to achieve energy stability and security.

² http://www.nap.edu/catalog.php?record_id=18250

³ <http://www.agiweb.org/workforce/reports.html>

The research dollars invested in petroleum R&D go primarily to universities, state geological surveys, and research consortia to address critical issues like enhanced recovery from known fields and unconventional sources that are the future of our natural gas supply. This money does not go into corporate coffers, but it helps American businesses remain competitive by giving them a technological edge over foreign companies. All major advances in oil and gas production can be tied to research and technology. AGI strongly encourages the Subcommittee to ensure a balanced and diversified energy research portfolio that does not ignore the nation's primary sources of energy for the near future, fossil fuels.

Thank you for the opportunity to present this testimony to the subcommittee. If you would like any additional information for the record, please contact Maeve Boland at 703-379-2480, ext. 228 voice, 703-379-7563 fax, mboland@agiweb.org, or 4220 King Street, Alexandria VA 22302-1502.

Testimony by Dr. Michael Corradini
President, American Nuclear Society
House Appropriations Subcommittee on Energy and Water Development
On the FY 2014 Energy and Water Development Appropriations Bill
March 29, 2013

Chairman Frelinghuysen, Ranking Member Kaptur, members of the Subcommittee, on behalf of the 11,000 members of the American Nuclear Society, I am pleased to provide testimony on FY 2014 appropriations for the U.S. Department of Energy and other relevant agencies under the Subcommittee's jurisdiction.

As you know, ANS represents a diverse cadre of nuclear professionals. As such, our members' opinions on nuclear issues are often wide-ranging, and perhaps sometimes different from the Subcommittee. However, the ANS truly appreciates the thoughtful and deliberate manner in which the Subcommittee approaches issues related to nuclear energy, science, and technology.

ANS believes the United States must maintain its nuclear energy technology capabilities, both from an energy supply and national security perspective. While we recognize that US demand for new nuclear reactors has cooled recently because of the economic downturn and historically low natural gas prices, the ANS believes nuclear energy is still an indispensable part of our long-term energy policy in the US.

The administration has set forth a sensible plan to address the current set of nuclear challenges: a targeted research and development program to promote sustainability of our current light water reactor fleet; a program to accelerate development and licensing of Small Modular Reactors (SMRs); research and development programs focused on the nuclear fuel cycle, advanced reactors, and developing simulation and modeling tools that have broad application across the nuclear sector.

Unfortunately, the administration's delay in releasing its FY 2014 budget prevents us from providing informed recommendations to the subcommittee. However, we are concerned that the President's FY 2014 budget request for the Department of Energy Office of Nuclear Energy (DOE NE) may bear similarities to its FY 2013 request, which was clearly insufficient to maintain progress on the administration's own announced priorities.

Although the overall FY 2013 request for DOE-NE was 0.7% above the FY 2012 enacted level, the Administration proposed moving \$95 million in funding for "Idaho Site-wide Safeguards and Security" into the main DOE NE budget from Other Defense Activities account. Without this accounting gimmick, the actual FY 2013 DOE NE budget would have been cut by 11.7%, even though the overall funding level for DOE would increase by 3.2%. It is apparent that this budget was more a product of internal budgetary "goal posting" than a deliberate attempt to reduce the scope of the administration's initiatives in nuclear energy science and technology. We hope that in its FY 2014 request, the administration takes a more straightforward approach.

The ANS believes it is extremely important to maintain funding for the DOE NE at consistent levels, and urges the subcommittee to base its FY 2014 recommendations on FY 2013 enacted levels.

We are extremely grateful to the subcommittee for its support of the Integrated University Program. In FY 2014, we request that the Subcommittee continue to support the full \$15 million in funding for the Nuclear Regulatory Commission's portion of the IUP program and the \$5 million FY2012 appropriated level for DOE-NE. While we are pleased that the current leadership of the DOE NE has reestablished its commitment as the primary steward of university-based nuclear education programs, we believe it is critically important for NRC to continue its activities in this area. As you may recall, it was the House Energy and Water Subcommittee that originally precipitated the transfer in funding for universities from DOE to NRC several budget cycles ago. If these activities are not funded, several very important activities will be terminated, including support for younger faculty awards, and collaboration on curriculum between two-year and four-year institutions of higher learning. I would also note that earlier this month, the NRC proposed to eliminate funding for the IUP in its initial plan to comply with sequestration. However, because IUP funding was written into the language of the Consolidated Appropriations Act of 2012 (P.L. 112-74) NRC will be constrained to fund the IUP in FY 2013 as per HR 933, the recently passed full-year continuing resolution. We ask the Committee to consider including appropriate language to allow the NRC to fully operate and staff this program at the prior level.

ANS recommends funding the SMR licensing technical program at \$95 million. We believe our recommended funding level would put the DOE SMR program on a sustainable trajectory to meet its budgetary milestones of \$452 million over a 5 year period. The subcommittee should recognize that the US is in a full scale race with other nations, such as Russia, China, Korea and India, to develop and deploy SMR technology. SMRs offer perhaps the best opportunity for improving the attractiveness of the US nuclear export portfolio and create manufacturing jobs in the US. Furthermore, US SMR technology incorporates the passively safe features so essential for new commercial nuclear power projects that will improve proliferation resistance and simplify the fuel cycle and waste management process.

The Advanced Reactor Concepts program should be funded near FY 2012 enacted levels. In its FY 13 budget request the administration proposed a 43% cut in funding for the Advanced Reactor Concepts program. A cut of this magnitude would severely diminish US global leadership in Generation IV nuclear technology. Even during the current global recession, international interest in developing advanced, non-light water reactor technologies has continued to grow. These reactor designs have many potential benefits, including inherent safety features, long refueling intervals, and the ability to consume nuclear waste as fuel. Even if we do not choose to develop these reactors domestically in the near term, steep cuts in US Generation IV R&D will directly impact our ability to promote US safety and nonproliferation standards around the world for these technologies.

The Next Generation Nuclear Plant project should be provided funding sufficient to complete fuel validation testing at the Idaho National Laboratory Advanced Test Reactor and conduct low-level pre-licensing activities. Although historically low natural gas prices in the US have also reduced interest in using nuclear technology for process heat and hydrogen, we still see tremendous medium term potential for high temperature gas cooled reactors for large scale fresh water production in arid regions and process heat for industry.

As such, the ANS believes that DOE should not abandon the NGNP project, and instead continue at a slower pace with design and licensing activities. DOE agrees. In his October 2011 letter to congressional appropriators, Energy Secretary Steven Chu indicated that, although the Department would not pursue Phase 2 design activities at this time, it would “continue to focus on high temperature reactor research and development activities, interactions with the Nuclear Regulatory Commission to develop a licensing framework, and establishment of a public-private partnership until conditions warrant a change in direction.”

In its FY 2013 budget request, the administration proposed a 47% percent cut in funding that would not have allowed DOE to pursue its stated course, and instead would have caused irreversible losses in the program. For instance, several samples of advanced fuels currently being tested in the INL Advanced Test Reactor would have to be prematurely removed, thereby destroying valuable scientific data that would take years to recreate.

Finally, we urge the Subcommittee to provide such sums as may be necessary for the NRC to complete consideration of the Yucca Mountain license application, should this action be required by court decision.

The American Nuclear Society does not have a position on the suitability of the Yucca Mountain Project as a repository for spent nuclear fuel. However, the ANS membership has been deeply disappointed that the administration has essentially chosen to value politics over sound science in withdrawing the license application. Furthermore, our members continue to express deep concern that the Administration has not yet rationalized their actions with the existing law—the Nuclear Waste Policy Act, and have put at risk all future efforts to bring a science based solution to this decades long-process. We recognize that the Administration has committed itself to seeking a “consent based” approach in siting a repository. However, there is pending court action that may require NRC to move forward with completing the licensing process for the Yucca Mountain repository. The ANS believes that the scientists and engineers of the Nuclear Regulatory Commission should be allowed to complete their technical review of the licensing application and their conclusions released to the public.

In closing, we hope the Subcommittee will closely consider our testimony as it assembles its FY 2014 Energy and Water Development Appropriations Bill, and we stand ready and willing to provide additional technical assistance as needed.

Thank you.



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**STATEMENT OF
 THE AMERICAN SOCIETY OF CIVIL ENGINEERS
 BEFORE THE
 SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT AND RELATED
 AGENCIES
 U.S. HOUSE OF REPRESENTATIVES
 ON THE
 ON THE FY 2014 BUDGET OF
 THE U.S. ARMY CORPS OF ENGINEERS
 MARCH 29, 2013**

Mr. Chairman and Members of the Subcommittee:

The American Society of Civil Engineers (ASCE) is pleased to provide this statement for the record on the proposed budgets of the U.S. Army Corps of Engineers (USACE) and the Bureau of Reclamation for Fiscal Year 2014.

The administration has not yet released its budget proposal for Fiscal Year 2014. Therefore, ASCE will outline its concerns over the trends in infrastructure spending by the Corps of Engineers and the continuing need for an increased budget for essential water resources programs at the Corps.

Last week ASCE released its 2013 Report Card for America's Infrastructure. The Report Card gave the nation's infrastructure an overall grade of "D+" across 16 separate infrastructure categories and estimated that it would cost \$3.6 trillion by 2020 against estimated current funding of \$2 trillion, leaving an investment "gap" of \$1.6 trillion to bring all 16 systems into a state of good repair. The nation's ports received a grade of "C," inland waterways received a grade of "D-," levees also received a "D-," and dams received a "D."

FAILURE TO ACT

Aging infrastructure for marine ports and inland waterways threatens more than 1 million U.S. jobs according to ASCE's latest Failure to Act economic study on the nation's ports released last year. According to the report, between now and 2020, investment needs in the nation's marine ports and inland waterways sector total \$30 billion, while planned expenditures are about \$14 billion, leaving a total investment gap of nearly \$16 billion. This investment gap is for what would be considered the federal responsibility.

The nation's marine ports and inland waterways are critical links that make international commerce possible. However, with the scheduled expansion of the Panama Canal by 2015, the average size of container ships is likely to increase significantly, affecting the operations at most of the major U.S. ports that handle containerized cargo and requiring both sectors to modernize. Needed investment in marine ports includes harbor and channel dredging, while inland waterways require new or rehabilitated lock and dam facilities.

The United States has 300 commercial ports, 12,000 miles of inland and intra-coastal waterways and about 240 lock chambers, which carry more than 70 percent of U.S. imports by tonnage and just over half of our imports by value. To remain competitive on a global scale, U.S. marine ports and inland waterways will require investment in the coming decades beyond the \$14.4 billion currently expected. ASCE reports that with an additional investment of \$15.8 billion between now and 2020, the U.S. can eliminate this drag on economic growth and protect:

- \$270 billion in U.S. exports
- \$697 billion in GDP
- 738,000 jobs in 2020
- \$872 billion in personal income, or \$770 per year for households

PORTS

America's ports received a grade of "C," which is one of the highest marks in an otherwise dismal Report Card. The Corps of Engineers estimates that more than 95 percent, by volume, of all overseas trade produced or consumed by the United States moves through our ports. To sustain and serve a growing economy and compete internationally, our nation's ports need to be maintained, modernized, and expanded. While port authorities and their private sector partners have planned more than \$46 billion in capital improvements from now until 2016, federal funding has declined for navigable waterways and landside freight connections needed to move goods to and from the ports.

While port terminal facilities seem to have benefited from significant new investment and improvements, the connections to the ports – the navigation channels leading to the docks as well as the landside connections – need to be brought to modern standards. The terminals require navigable waterway maintenance and dredging, along with rail and highway connector improvements to function optimally. Without these corresponding improvements, the terminals will see limited benefits in terms of moving additional goods.

The navigation channels coming into the ports need to be deep enough – in most cases, 45 feet deep – to accommodate the new larger ship sizes. Currently, many port harbors are too shallow for these ships. According to the U.S. Army Corps of Engineers, most West Coast ports are able to accommodate these larger vessels due to their naturally deep harbors. However, in 2010, only five Atlantic ports, and one Gulf port, could accommodate moderately large vessels (more than 5,000 20-foot equivalent units). The demands of the growing numbers and size of ships is often exceeding the capacity of current infrastructure, requiring significant additional investment to maintain current levels of performance at deep water ports. From 2012 to 2020, it is estimated that 75 percent of the capital investment needs of U.S. ports will be for port

expansion, with 25 percent of needs for rehabilitation of existing assets. After 2040, the majority of investment needs will shift to rehabilitation.

THE HARBOR MAINTENANCE TRUST FUND

The Harbor Maintenance Revenue Act authorizes expenditures from the HMTF to finance up to one hundred percent of eligible Corps harbor operation and maintenance costs, including the operation and maintenance of Great Lakes navigation projects.

The dredging of the nation's ports and harbors has suffered from years of under investment in a system that is critical to America's ability to compete in the global marketplace. For Fiscal Year 2013 the administration requested \$839 million be appropriated from the HMTF—only 50 percent of total estimated revenues. Total revenues are now estimated at \$1.659 billion for FY 2013. As a result, the great majority of our nation's harbors—including eight of the top 10 largest ports—are not being maintained to their fully authorized width and depth. Ships carrying U.S. goods must "light-load," thus increasing the costs of the goods and decreasing American competitiveness in the global economy.

This Subcommittee should appropriate \$1.6 billion from the HMTF in FY 2014.

INLAND WATERWAYS

Inland waterways rated a "D-" in the 2013 *Report Card*. Our nation's inland waterways and rivers are the hidden backbone of our freight network – they carry the equivalent of about 51 million truck trips each year. In many cases, the inland waterways system has not been updated since the 1950s, and more than half of the locks are over 50 years old. Barges are stopped for hours each day with unscheduled delays, preventing goods from getting to market and driving up costs. Ninety percent of locks and dams on the U.S. inland waterway system experienced some type of unscheduled delay or service interruption in 2009, averaging 52 delays a day. Projects to repair and replace aging locks and dredge channels take decades to approve and complete, exacerbating the problem further.

The hours lost due to constant unscheduled delays has increased significantly since the 1990s, which costs industries and consumers hundreds of millions of dollars annually. For 2011, the total number of hours of delay experienced by barges throughout the entire inland waterway system reached the equivalent of 25 years. The greatest delay in 2011, at a particular lock, was the Markland Lock on the Ohio River with 52,032 hours. The Ohio and Upper Mississippi systems have a disproportionate share of delays compared to other rivers across the country.

According to the Corps of Engineers, maintaining existing levels of unscheduled delays on inland waterways, and not further exacerbating delays, will require more than \$13 billion by 2020, while current funding levels are expected to be just \$7 billion during this period. Roughly 27 percent of these needs entail the construction of new lock and dam facilities, and 73 percent are estimated for the rehabilitation of current facilities.

DAMS AND LEVEES

The average age of the 84,000 dams in the country is 52 years old. The nation's dams are aging and the number of high-hazard dams is on the rise. Many of these dams were built as low-hazard dams protecting undeveloped agricultural land. However, with an increasing population and greater development below dams, the overall number of high-hazard dams continues to increase, to nearly 14,000 in 2012. The number of deficient dams is estimated at more than 4,000, which includes 2,000 deficient high-hazard dams. The Association of State Dam Safety Officials estimates that it will require an investment of \$21 billion to repair these aging, yet critical, high-hazard dams.

Dams will require \$21 billion through 2020 to maintain them in good condition. With investments estimated at only \$6 billion over that period, the investment gap will total \$15 billion.

The nation's estimated 100,000 miles of levees can be found in all 50 states and the District of Columbia. Many of these levees were originally used to protect farmland, and now are increasingly protecting developed communities. The reliability of these levees is unknown in many cases. Investment needs total \$80 billion, current spending is approximately \$8 billion, leaving an investment gap for levees of \$72 billion by 2020. Public safety remains at risk from these aging structures, but the return on investment is clear as levees helped prevent more than \$141 billion in flood damages in 2011.

FISCAL YEAR 2014 BUDGET REQUEST

The Corps is operating under a continuing resolution for Fiscal Year 2013 that adopts the spending level enacted for FY 2012. That FY 2012 appropriation came to \$5 billion, below what is necessary to maintain America's interconnected system of inland waterways, locks and dams, levees, and other key infrastructure systems. The sequester order of March 1, 2013, reduced the Corps' FY 2013 Civil Works appropriation by a further \$475 million.

Under the continuing resolution for FY 2013, including cuts from the sequestration order, the Corps' construction budget was cut by \$270 million. If allowed to continue, this trend likely will result in ever greater system failures and the consequent expenditure of tens of billions of dollars to rebuild what could have been built more economically in the first instance. ASCE believes that these levels of spending are inadequate to meet the nation's security, economic and environmental demands in the twenty-first century.

ASCE recommends a minimum appropriation of \$5.5 billion for the Corps of Engineers in FY 2014 to account for inflation and to halt the decline in budget authority to ensure safe infrastructure and a sound economy.

Congress must appropriate \$500,000 in FY 2014 for the National Inventory of Dams Program and \$30 million for the national levee inventory program.



**AMERICAN
SOCIETY FOR
MICROBIOLOGY**

Public and Scientific Affairs Board

*Statement of the American Society for Microbiology
Submitted to the
House Appropriations Subcommittee
On Energy and Water Development
On the Fiscal Year 2014 Appropriation for the Department of Energy*

March 29, 2013

The American Society for Microbiology (ASM) is pleased to submit the following testimony on the Fiscal Year (FY) 2014 appropriation for the Department of Energy (DOE) science and research programs. The ASM is the largest single life science organization in the world with more than 37,000 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 DOE Office of Science is the lead federal agency supporting research and development (R&D) in energy, a field rich with innovation possibilities and economic significance. The Office of Science manages a portfolio through six program offices: Advanced Scientific Computing Research, Basic Energy Sciences, Biological and Environmental Research, Fusion Energy Sciences, High Energy Physics, and Nuclear Physics. The Office of Science directly finances both DOE and non-DOE R&D projects, while operating unique federal facilities also made available to extramural scientists and engineers.

The ASM is concerned that budget cut backs will negatively impact Office of Science programs that clearly contribute to US global competitiveness in science and technology. Although the specific effects of sequestration mandated cuts are still uncertain, the DOE anticipates a \$215 million decrease for the Office of Science in FY 2013.

Both academia and industry in the United States depend upon funding and facilities available through the Office of Science. For decades, it has been the dominant federal sponsor of physical sciences research, while also supporting advances in computer science, materials science, mathematics, biological and environmental science, nanotechnology, and engineering. DOE grants and contracts support researchers and their students at more than 300 US colleges and universities. Funding cuts will impact all scientific users of DOE facilities in addition to the probable reductions in both the size and number of extramural grants awarded. DOE has also predicted that sequestration would cause schedule delays and increased costs for planned new user facilities. Collectively, these declining resources negatively impact the training of the Nation's future R&D workforce.

DOE Funding Expands R&D Enterprise and Supports Innovation

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In FY 2013 the DOE's Office of Science was slated for increased funding to support physical sciences and engineering, guided by strategies to enhance US capabilities under the America COMPETES Act and the America COMPETES Reauthorization Act. The final Office of Science funding level still fell far short of the doubling pace of increases established by the America COMPETES Act. Federal R&D expenditures are far sighted investments in innovation and ultimately in US economic vitality. Although the United States today, remains the world's single largest R&D performer, the Nation's R&D growth has slowed and decreased in recent years, especially when compared to growth in other nations. Under the current DOE Strategic Plan, the agency's priority goals include: "maintaining a vibrant US effort in science and engineering as a cornerstone of our economic prosperity, with clear leadership in strategic areas."

Last November, the President's Council of Advisors on Science and Technology (PCAST) released its report on the future of the US research enterprise. Among its conclusions was that the US is "*unique in the world in the range and quality of its Federal and National Laboratories*" and that "*the three pillars of the US research enterprise are its research universities, its National Laboratories, and industry's substantial commitment to basic and applied research.*" The DOE's national laboratories are integral to R&D innovation and economic success. The Office of Science manages 10 of the 17 DOE laboratories in this country, utilized each year by more than 25,000 non-DOE scientists nationwide.

In 2012, updates to the DOE's strategic plan specifically addressed the importance of Office of Science managed facilities: "*prioritization of scientific facilities to ensure optimal benefit from Federal investments....By September 30, 2013, formulate a 10-year prioritization of scientific facilities across the Office of Science based on (1) the ability of the facility to contribute to world-leading science, (2) the readiness of the facility for construction, and (3) an estimated construction and operations cost of the facility.*" Many Office of Science facilities host one of a kind, unique and difficult to access equipment; often too expensive to construct and operate elsewhere. The DOE points to the example of the pharmaceutical industry's use of Argonne National Laboratory's Advanced Photon Source to rapidly screen the molecular structure of candidates for novel drug design. The computing facility at the Oak Ridge National Laboratory recently screened 2 million different drug compounds against a targeted receptor in less than two days, using 3D biological simulations at a fraction of the cost and time typically required.

DOE sponsored discoveries have evolved into valuable commercial products and processes through the agency's emphasis on technology transfer (T2) to the private sector. In 2012, DOE researchers won 36 of the 100 awards announced each year by R&D Magazine for the most outstanding technology advances with commercial potential. Since competition began in 1962, DOE national labs have won more than 800 awards. T2 mechanisms like patent licensing and cooperative research and development agreements (CRADAs) have built strong collaborations among the Office of Science, other federal entities, and US industry. Annual T2 performance metrics underscore DOE's importance to the US research enterprise: in FY 2010, 697 active CRADAs; 1,616 new inventions disclosed and 480 patents issued; 6,224 licenses granted for using DOE inventions or other intellectual property; and about \$41 million in licensing income and \$25 million in royalties.

In 2012, the Lawrence Livermore National Laboratory licensed its microbial detection array technology to a company that supplies DNA microarrays and instruments, for eventual commercialization and sale to food safety professionals, law enforcement, medical professionals and others. The Lawrence Livermore Microbial Detection Array (LLMDA) technology can detect within 24 hours, more than 2,200 viruses and 900 bacteria currently among its probe array, which will be updated periodically. In February, DOE's Advanced Research Projects Agency–Energy (ARPA-E) announced 17 of its projects have attracted more than \$450 million in private sector funding after ARPA-E's initial investment of approximately \$70 million. Twelve have been leveraged to form new companies, and at least 10 have partnered with other government agencies for additional investment. ARPA-E was created under the America COMPETES Act, receiving its initial funding in 2009. The ARPA-E projects with current private sector investments include engineering bacteria for efficient fuel production and developing electrofuels; or liquid fuel derived from renewable electricity and bacteria.

DOE Funding Promotes Biological Sciences and Sustainable Energy

Within the Office of Science, the Biological and Environmental Research program funds cutting edge studies in environmental contaminants, biofuels, genomics and cross disciplinary research integrating biological and physical sciences. The ASM is particularly interested in BER's broad utilization of microorganisms, including redesigning microbes for sustainable fuel production and optimal contaminant bioremediation. We recognize the invaluable contributions from BER's Genomic Sciences Program and the DOE Joint Genome Institute (JGI), ambitious efforts of notable benefit to understanding the biological sciences that clearly justify strong funding in FY 2014 and beyond. Previous investments have generated a long list of results, including these recent examples:

- University scientists used X-ray crystallography to discover the structure of the regulator inside tuberculosis bacteria that control the pathogen's efflux pump rendering the pathogens resistant to drugs.
- DOE scientists determined the genetic sequence of a group of microbes called SR1 bacteria that have not been cultivated in the laboratory, discovering that the bacteria employ a unique genetic code; human oral SR1 bacteria are elevated in the oral infection periodontitis.
- Scientists studying bacterial RNA-guided cleavage of foreign DNA have described a new approach to editing microbial genomes, a type of "programmable DNA scissors" that has promising R&D applications vis-à-vis new biofuels and therapeutic drugs.
- Scientists at the Pacific Northwest National Laboratory demonstrated for the first time that a cyanobacterium can produce hydrogen and oxygen simultaneously and steadily for at least 100 hours, potentially important to commercial hydrogen production.
- DOE chemists will use high-throughput technologies developed at Los Alamos National Laboratory to screen beef samples for shiga toxin-producing *Escherichia coli* (STEC), during a three-year project focusing on the early detection of STEC at all levels of the US beef production chain.

DOE programs like BER and ARPA-E are leading the nation's R&D on renewable energy sources. In 2012, DOE joined with the Department of Agriculture (USDA) in distributing \$41 million among thirteen new biomass R&D projects aimed toward sustainable biofuel production,

in addition to other funding for biomass genomics to improve biofuel feedstocks. The joint sponsorship is part of a much larger DOE initiative with USDA to increase US biofuels. JGI researchers recently sequenced the genomes of eleven strains of a group of bacteria called actinobacteria, which produce cellulose degrading enzymes of interest to the biotechnology and biofuels industries and identified eight cellulolytic species not previously known to degrade cellulose biomass. DOE scientists also described a unique molecular transporter mechanism to deliver molecules into algal cells, pointing the way to engineering algae that synthesize biofuels, vaccines, and other compounds. At DOE's Joint BioEnergy Institute, researchers identified a tropical rainforest microbe that can survive high concentrations of ionic liquid used to dissolve cellulosic biomass in biofuel production, while others developed a new synthetic biology technique, dynamic sensor regulator system, which detects metabolic change and controls gene expression in microbes during biofuel production, increasing output.

The ASM urges Congress to fund the Department of Energy's Office of Science at the highest possible level in FY 2014. The DOE Office of Science programs enhance United States competitiveness through fundamental research and advanced scientific breakthroughs that revolutionize the Nation's approach to challenging and ongoing, energy and environment challenges.

The ASM appreciates the opportunity to provide written testimony and would be pleased to assist the Subcommittee as it considers the FY 2014 appropriation for the DOE.



American Society of Plant Biologists

Cultivating a better future through plant biology research

Official Written Testimony in Support of the Department of Energy's Office of Science Fiscal Year 2014 Budget

Submitted to the Subcommittee on Energy and Water Development
Committee on Appropriations
United States House of Representatives
Washington, D.C.

Submitted by

Dr. Crispin Taylor, Executive Director, American Society of Plant Biologists

March 27, 2013

On behalf of the American Society of Plant Biologists (ASPB), we submit this statement for the official record to support the highest funding level possible for the Department of Energy (DOE) Office of Science for fiscal year (FY) 2014. Our testimony highlights the importance of sustained investments in biology research—particularly plant biology research, which is a major backbone for enhanced bioenergy production—as the nation seeks to address energy security and other vital issues.

ASPB recognizes the difficult fiscal environment our nation faces, but we believe investments in scientific research constitute critical steps toward economic recovery. We would also like to thank the Subcommittee for its consideration of this testimony and for its support for the fundamental research mission of the DOE Office of Science.

ASPB is an organization of approximately 4,500 professional plant biology researchers, educators, graduate students, and postdoctoral scientists with members across the nation and throughout the world. A strong voice for the global plant science community, our mission—achieved through work in the realms of research, education, and public policy—is to promote the growth and development of plant biology, to encourage and communicate research in plant biology, and to promote the interests and growth of plant scientists in general.

Fuel, Food, Environment, and Health: Plant Biology Research and America's Future

Plants are vital to our very existence. They harvest sunlight, converting it to chemical energy for food and feed; they take up carbon dioxide and produce oxygen; and they are the primary producers on which most life depends. Indeed, plant biology research is making many fundamental contributions in the areas of domestic fuel security and environmental stewardship; the continued and sustainable development of better fuels, foods, fabrics, pharmaceuticals, and

building materials; and in the understanding of foundational biological principles that underpin improvements in plant growth and home-grown energy sources for all Americans.

In particular, plant biology is at the center of numerous scientific breakthroughs in the increasingly interdisciplinary realm of alternative energy research. For example, discoveries will enable energy crops that are more drought and pest tolerant, thereby greatly boosting yields. Bioenergy research encompasses fundamental and applied plant biology, engineering, chemistry, and physics, representing 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 has become essential to our understanding of complex biological systems, ranging from single cells to entire ecosystems. This research is critical for our future in bioenergy production.

Despite the fact that foundational and mission-oriented plant biology research—the kind of research DOE funds—underpins vital advances in practical applications in energy, health, and the environment, plant scientists have had to leverage modest federal funding in order to understand the basic functions and mechanisms of plants. Strong investments in plant biology research are important considering the significant positive impact crop plants have on the nation's economy and in addressing some of our most urgent challenges, including energy and food security.

To address these future challenges and how they might be mitigated through investments in plant biology research, ASPB organized a two-phase Plant Science Research Summit in September 2011 and January 2013. With support and funding from DOE, the National Science Foundation, the U.S. Department of Agriculture, and the Howard Hughes Medical Institute, the Summit brought together representatives from across the full spectrum of plant science research to develop a ten-year consensus plan to fill critical gaps in our understanding of plant biology to address the grand challenges we face. As a research community, our vision is to create plant systems that are flexible and adaptable to new and existing challenges by increasing the predictive and synthetic abilities of plant biology. In achieving these goals, the plant science research community will make significant contributions to:

- Exploring, conserving, and utilizing our natural resources;
- Protecting, maintaining, and improving energy crop productivity; and
- Creating new plant-inspired industries.

ASPB expects to publish a report from the Plant Science Research Summit in spring 2013. This report will further detail the plant science community's priorities and the key initiatives needed to address our grand challenges.

Recommendations

Because the ASPB membership has extensive expertise and participation in the academic, industry and government sectors, ASPB is in an excellent position to articulate the nation's plant science priorities as they relate to fundamental plant biology and, specifically, with regard to recommendations for bioenergy research funding through DOE's Office of Science.

Within the Office of Science, the programs in Biological and Environmental Research (BER) and Basic Energy Sciences (BES) are crucial to a mechanistic understanding of the most fundamental biological processes and how they may be adapted and applied in developing renewable energy capabilities. For this reason, ***ASPB is supportive of the highest funding level possible for BER and BES.*** Sustained funding for these programs is vital as the discoveries made in these areas will ultimately be the foundation for the next fuels and technologies we use in our daily lives.

In addition:

- We commend the DOE Office of Science, through its programs in BES and BER, for funding the Bioenergy Research Centers and the Energy Frontier Research Centers. These centers provide a model for collective science innovation that complements DOE's essential investment in individual investigator and small group science. In addition to continued investments in these centers, ***ASPB strongly encourages additional funding for the DOE Office of Science that would specifically target funding for individual or small-group grants for bioenergy and plant growth 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 funding for fundamental studies of photosynthesis, which is the primary source of chemical energy on the planet. However, the current funding available for photosynthetic research is not commensurate with the central role that photosynthesis plays in energy capture and carbon sequestration. Hence, ***ASPB calls for the Office of Science to expand its research portfolio in the area of photosynthesis and carbon capture.***
- Considerable research interest is now focused on the processing of plant biomass for energy production. Fundamental discoveries regarding the genes that control plant growth and enable plant growth in response to stresses, including drought, are needed to secure our energy future. If biomass crops, including woody plants, are to be used to their fullest potential, extensive effort must be expended to improve our understanding of their basic biology and development, as well as their agronomic performance and conversion efficiency in processing fixed carbon to fuels and high-value co-products. ***Therefore, ASPB calls for DOE to support research targeted at efforts to increase the utility and agronomic performance of bioenergy feedstocks, both in the field and for their end users in the bioeconomy.***

Thank you for your consideration of our testimony on behalf of the American Society of Plant Biologists. For more information about the American Society of Plant Biologists, please see www.aspb.org.

Dr. Crispin Taylor
Executive Director
American Society of Plant Biologists

STATEMENT PRESENTED BY:

Reynold S. Minsky, President
 Board of Commissioners
 Fifth Louisiana Levee District
 102 Burnside Drive
 Tallulah, LA 71282
 Email: fifthld@bellsouth.net

STATEMENT PRESENTED TO:

House Subcommittee on Energy and
 Water Development
 Fiscal Year 2014

The Board of Commissioners for the Fifth Louisiana Levee District respectfully requests of the U.S. House of Representatives Appropriations Subcommittee on Energy and Water Development an appropriation in the sum of 500 million dollars for the Mississippi River and Tributaries Project.

The Flood of 2011 exceeded most records for gauge readings and volumes of water – surpassing the 1927 and 1937 Floods. The investment protected by the Mississippi River and Tributaries (MR&T) system during this flood was \$234 billion with cumulative damages prevented by the MR&T system being \$612 billion and a return on federal investment of \$44 to \$1. The hydraulic improvements made by the construction of dikes, cutoffs and channel improvement that allowed a record flood by volume to flow at a lower elevation, are the same improvements that allowed barge traffic to move during the near record lows experienced throughout the Mississippi River in 2012.

Countless lives have been spared due to the construction of the MR&T project, also our nation receives nearly One Billion dollars of navigational benefits each year due to this project. Truly this is a wise investment for this country and it is good for our economy. This investment provides benefits far beyond their actual cost to the taxpayer by offering protection to over 4 million citizens and allows people to live and work throughout a 35,000 square mile area in seven states.

Local interests have done their part in providing rights of way, roads, utilities and the like. Our government now needs to fulfill their obligatory part of the project and bring it to completion as quickly as possible. We believe the Corps could adequately use 500 million dollars each year for maintenance and construction within the MR&T.

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 2014, 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.

**Statement of Peter Nimrod
Chief Engineer
Board of Mississippi Levee Commissioners
to the
House Committee on Appropriations
Subcommittee on Energy and Water Development
on Behalf of the
Appropriation for Flood Control
Mississippi River and Tributaries Project
Request for Fiscal Year 2014**

March 29, 2013

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

This statement is prepared by Peter Nimrod, Chief Engineer for the Board of Mississippi Levee Commissioners, Greenville, Mississippi, and submitted on behalf of the Board and the citizens of the Mississippi Levee District. The Board of Mississippi Levee Commissioners is comprised of 7 elected commissioners representing the counties of Bolivar, Issaquena, Sharkey, Washington, and parts of Humphreys and Warren counties in the Lower Yazoo Basin in Mississippi. The Board of Mississippi Levee Commissioners is charged with the responsibility of providing protection to the Mississippi Delta from flooding of the Mississippi River and maintaining major drainage outlets for removing the flood waters from the area. These responsibilities are carried out by providing the local sponsor requirements for the Congressionally authorized projects in the Mississippi Levee District. **The Mississippi Levee Board and the Mississippi Valley Flood Control Association support an appropriation of \$500 Million for FY 2014 for the Mississippi River & Tributaries Project.** This is the minimum amount that we consider necessary to allow for an orderly completion of the remaining work in the Valley and to provide for the operation and maintenance, as required, to prevent further deterioration of the completed flood control and navigation work.

It is apparent that the Administration loses sight of the fact that the Mississippi River & Tributaries Project provides protection to the Lower Mississippi Valley from waters generated across 41% of the Continental United States. These waters flow from 31 states and 2 provinces of Canada and must pass through the Lower Mississippi Valley on its way to the Gulf of Mexico. We will remind you that the Mississippi River & Tributaries Project is one of, if not the most cost effective project ever undertaken by the United States government. The foresight of the Congress in their authorization of the many features of this project is exemplary.

The many projects that are part of the Mississippi River & Tributaries Project not only provide protection from flooding in the area, but the award of construction contracts throughout the Valley provides assistance to the overall economy of this area. The employment of the local workforce and purchases from local vendors by the contractors help stabilize the economy in one of the most impoverished areas of our country.

In 2011 the MR&T Project successfully passed the greatest flood on the Mississippi River. Every feature of the MR&T Project including levees, floodways and reservoirs were utilized. Not one acre of land was flooded that was not designed to flood. Not one life was lost. The MR&T system prevented \$234 Billion in damages in 2011 alone. All together since 1928, Congress has invested \$14 Billion in the MR&T Project and it has prevented \$612 Billion in damages! This is a 44:1 benefit to cost ratio. The flow carried by the Mississippi River in 1927 was 66% of a Project Design Flood. The flow carried by the Mississippi River in 2011 was 85% of a Project Design Flood. There is a larger flood on the horizon. In fact, stages will be 8' higher when we have the Project Design Flood than we just experienced in 2011. The MR&T Project is only 89% complete. Congress must be proactive and fully fund the MR&T Project until it is completed. If not, the MR&T Project will not pass the Project Design Flood.

Even though the MR&T Project worked, it suffered a lot of damage and many weaknesses were discovered during the 2011 Epic Flood. The Mississippi Levee Board would like to commend Congress for appropriating \$802 Million for repairing the MR&T System following the historic 2011 Flood. This money will help reset and rebuild the MR&T System so that we can pass the next major flood event. Money spent on the MR&T Project is money well spent that returns much more money in prevented damages.

Thanks to the additional funding provided by the Congress over the last several years over and above the Administration's budget, work on the Mainline Mississippi River Levee Enlargement Project is continuing. Of the original 69 miles of deficient levees in the Mississippi Levee District, 35.4 miles of work have been completed and 7.4 miles are currently under contract. We are requesting more money for construction on the Mainline Mississippi River Levees in the Lower Mississippi Valley Division which will allow the Vicksburg and Memphis districts to keep existing contracts on schedule and award contracts to avoid any future unnecessary delays in completing this vital project.

For the past few years the President's Budget has not included funding for any construction projects within the Yazoo Basin. This action is especially difficult to understand during a time when our Nation needs an economic boost. These are all projects authorized and funded so wisely by the Congress. All of these projects are encompassed in the footprint of the Delta Regional Authority, an area recognized by the Congress as requiring special economic assistance to keep pace with the rest of our great Nation. We can not lose sight of the fact that all of these projects are required to return more than a dollar in benefits for each dollar spent.

The recommended plan for the Yazoo Backwater Project included a pump that will lower the 100-year flood event by 4.5 feet thereby reducing urban and rural structural damages, providing benefits to the remaining agricultural lands, and reducing the frequency and duration of floods. The plan also includes reforestation easements to be purchased on up to 55,600 of existing agricultural land which will provide benefits in every environmental category - wetlands, terrestrial, aquatics, and waterfowl resources as well as vastly improving water quality. This was a model project that should be the standard for future public works projects in the United States. However on August 31, 2008, the Environmental Protection Agency (EPA) used its authority under Section 404(c) of the Clean Water Act (CWA) to veto the Yazoo Backwater Project even though it is exempt by Section

404(r) of the CWA. The Mississippi Levee Board sued EPA in a lawsuit against EPA asking the Federal Court to determine if this project is indeed exempt from an EPA 404(c) veto by the exemption in Section 404(r) of the CWA. The Federal Court has ruled in favor of EPA. Unfortunately this model project is now completely stopped! **If the Yazoo Backwater Project were in place in 2008, 2009 and 2011, the \$220 Million dollar project would have prevented \$257.5 Million in damages!** Congress promised flood protection for the Mississippi South Delta back in 1941 when the Eudora Floodway was removed from the MR&T Project. Arkansas and Louisiana have both benefitted from this floodway removal while Mississippi continues to be flooded. **We urge Congress to take up this backwater flooding problem again and find a solution for the Mississippi South Delta.**

We are requesting more money for the Yazoo Backwater less Rocky Bayou Project. This money will be used to start the Environmental Impact Statement for the Yazoo Backwater Levee Enlargement Project. This levee is designed to overtop during a project design flood, but it needs to be raised 5.8' to get to the required elevation. This backwater levee is supposed to overtop when we are within 2' of a Project Design Flood. In 2011 the Mississippi River was 8' below a Project Design Flood and the Yazoo Backwater Levee came within 4" of overtopping. We need this backwater levee raised immediately.

Work on the Big Sunflower (Upper Steele Bayou) Project has proved to be very beneficial. The Steele Bayou Sedimentation Reduction Project has installed drop-pipe structures at headcut locations all along Steele Bayou. These control structures stop the movement of sediment into Steele Bayou. Sediment is bad for flood control and water quality. We are requesting more money to keep this project moving forward.

Work on the Delta Headwaters Project has proven effective in reducing sediments to downstream channels. To discontinue this project will only diminish water quality by increasing sediment, reducing the level of flood protection to the citizens of the Delta and increasing required maintenance. We are requesting more money to continue this project.

Maintenance of completed works can not be over looked. The four flood control reservoirs overlooking the Delta have been in place for 50 years and have functioned as designed. Required maintenance must be performed to avoid any possibility of failure during a flood event. We are asking for more money for Arkabutla Lake, Enid Lake, Grenada Lake, and Sardis Lake.

We are requesting more money for Maintenance of the Mainline Mississippi River Levees in the Lower Mississippi Valley Division which will provide for repair of levee slides, slope repair, and repair of the gravel maintenance roadway which is so vital to access during high water.

The Mississippi River and our Ports and Harbors need money for maintenance dredging. The Mississippi River carries tons of sediment every second. This sediment falls out in slack water areas such as entrances to our Ports and Harbors. The Greenville Port and Vicksburg Port both need more money to perform annual maintenance dredging. This dredging is vital to keep these ports open during the low-water season when much of the farm harvest is ready to be transported.

The Environmental Protection Agency (EPA) has been given too much power under Section 404(c) of the Clean Water Act (CWA) which allows EPA to veto Congressionally authorized projects. During the early 1990's, due to abuse of the 404(c) power by EPA, Congress considered removing this authority from EPA. EPA has again invoked this veto power on the Yazoo Backwater Project. EPA is saying that you can't lower the water level with a flood control project! By killing this project with 404(c) veto authority, EPA is drawing a line in the sand over the future of flood control in our great nation. EPA has vetoed the Yazoo Backwater Project even though it was approved, authorized and funded by Congress and exempt from a 404(c) veto by 404(r). **It is now time to again take up this issue and remove the 404(c) veto power from EPA before they kill another flood control project that has been authorized by Congress.**

The Council of Environmental Quality (CEQ) draft proposal of changes to the Principals and Guidelines (P&G) for Federal Agencies fails to establish a clear, concise, and workable framework to guide development of water resources projects. It elevates environment considerations over economic benefits, social well-being and public safety. Because of these critical and extensive failings, we recommend that this effort be put aside and restarted from the beginning. Unfortunately the Administration secretly reconvened the Water Resources Council on March 18th without notice to approve the final Principles, Guidelines & Requirements. We are asking Congress to add language in the Continuing Resolution or Conference Report that directs the Corps to utilize the previous P&G for project development criteria.

As members of the Congress representing the citizens of our Nation who live with the Mississippi River everyday, you clearly understand both the benefits provided by this resource and the destructive force that must be controlled during a flood. On behalf of the Mississippi Levee Board, I can not express enough, our appreciation for your efforts in providing adequate funding over the last several years that has allowed construction to continue on our much needed projects and thank you in advance for your kind consideration of our requests for fiscal year 2014.

BRAZOS RIVER HARBOR NAVIGATION DISTRICT-FREEPORT, TEXAS

**HOUSE ENERGY AND WATER DEVELOPMENT SUBCOMMITTEE
ON APPROPRIATIONS**

US ARMY CORPS OF ENGINEERS

**Contact: Pat Younger, Government Relations Liaison for Port Freeport
713-465-6343 (office)
713-816-6477 (cell)
Email: youngerandassoc@aol.com**

**We express full support of the inclusion in the FY'14 budget for the full capability
of the USACE of..... \$1 Million – PED**

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% 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' deep Freeport Harbor Channel and a 70' 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 three miles from deep water, Port Freeport is one of the most accessible ports on the Gulf Coast.

PROJECT DESCRIPTION

The FY'02 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 full funding for recon and feasibility to completion. The Chief’s Report was completed in January 2013 and is currently under review by OMB.

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-Phillips 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 16th in foreign tonnage in the United States. It is responsible for augmenting the Nation’s economy by generating over 66,680 jobs in Texas, over 13,300 direct. It also augments the economy by providing annual, state, and local taxes of over \$487,000. 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 29 years, occupying lease sites comprising of 15 acres. 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 17 years. There are about 400 jobs associated with this operation.

Turbana Banana & Isabella Shipping- Turbana and Isabella, divisions of Uniban, based in Colombia import 4,500 pallet loads of green fruit and other exotic fruits into Port Freeport weekly. The fruit is processed in a chiller, which the Port undertook and built 8 years ago at a cost of \$7M dollars. 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%. 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. - As a 27-year tenant of the Port, this company has the largest rice milling operation in the United States located on water. ARI currently processes 250,000 tons of rice annually with a majority shipped by vessel to overseas markets. This tenant produces over 450 jobs.

Parker Cabett Subsea- A division of Parker Hannifin Industries is a manufacturer of fiber optic cable used in the offshore exploration industry. Very large cable laying vessels receive miles of continuous cable from this facility on a regular basis. At full production, this operation generates about 150 jobs.

Freeport LNG/ConocoPhillips- Port Freeport was successful 9 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, began operations in the first quarter of 2008. The terminal currently has full time employment of 50-60 people and operates 24 hours a day, 7 days per week. The current investment in the facility is \$1 Billion. Freeport LNG recently announced a second project that involves the export of gas and has leased another 170 acres from the port. With shale gas exports on the horizon, this facility could add another \$8 Billion in new investments and more new jobs to our area.

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 \$54 Billion dollars and employs 43,000 people worldwide, with 4,500 full time employees in the Texas operations and another 2000 contract employees. Texas Operations in Freeport is Dow's largest integrated site where 44% of Dow's products are sold in the United States and more than 21% 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% of Dow's volume through Dow docks on the Freeport channel.

Recent Port improvements include the Velasco Terminal, which was launched October 2007 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 of the construction, the first 800 ft. of berth and 20 acres of backland will be completed at a cost of approximately \$60 Million. The facility is designed to handle as many as 800,000 twenty foot containers.

DEFENSE SUPPORT OF OUR NATION

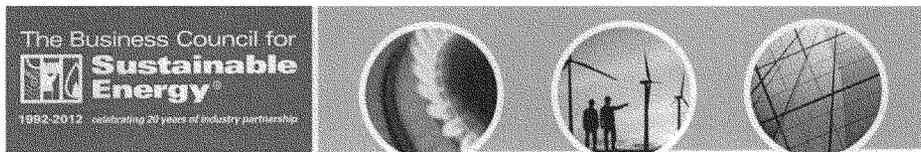
Port Freeport is a strategic port in times of National Defense of our Nation. It houses a critically important petroleum oil reserve – Bryan Mound. Its close proximity to State Highways 36 and 288 make it a convenient deployment port for Fort Hood. In these unusual times, it is important to note the 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 FY'14

We respectfully request that the full amount of the Corps capability for PED be secured to keep this important project moving forward. It is in the best interest of the federal government to give full support of this project.



Lisa Jacobson, President, Business Council for Sustainable Energy
 Written Testimony Submitted to the House Subcommittee on Energy and Water Development
 and Related Agencies

March 29, 2013

The Business Council for Sustainable Energy respectfully submits the following written testimony to the House Subcommittee on Energy and Water Development and Related Agencies regarding FY2014 appropriations for the Department of Energy Office of Energy Efficiency and Renewable Energy (EERE).

In this year's economic and budget environment it is clear that Congress will be forced to make difficult choices in appropriating federal dollars. In light of this, the Business Council for Sustainable Energy (BCSE) offers some areas for consideration during the FY2014 appropriations process in order to maximize the value to American taxpayers and spur economic recovery.

The Business Council for Sustainable Energy is a coalition of companies and trade associations from the energy efficiency, natural gas and renewable energy sectors, and also includes independent electric power producers, investor-owned utilities, public power and commercial end-users. Founded in 1992, the Council advocates for policies that expand the use of commercially-available clean energy technologies, products and services. The coalition's diverse business membership is united around the revitalization of the economy and the creation of a secure and reliable energy future for America.

As evidenced in the report *Sustainable Energy in America 2013 Factbook*, which was recently released by the Business Council for Sustainable Energy and Bloomberg New Energy Finance, affordable, homegrown and clean energy sources are powering the U.S. economy with jobs and investment, and are promoting the security and diversity of our energy supply. Materials regarding the *Factbook* can be found on the Council's website at www.bcse.org/sustainableenergyfactbook.html. BCSE encourages Congress to continue to support research, development and deployment of these technologies to foster market competition here and abroad and to ensure that the United States becomes the world leader in clean energy technology.

The Council believes that continued funding for programs under the Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE) is in the best interest of American taxpayers and supports a well-reasoned national energy strategy that improves our economic conditions at home and strengthens America's competitiveness in the global marketplace. The

Council encourages your committees to maintain stable and consistent funding in the following areas:

- Congress should continue to support funding of energy efficiency, including better building technologies, building codes and standards, industrial technologies, vehicles, and advanced manufacturing, in order to drive economic growth, promote the competitiveness of U.S. industries, and save consumers money. Congress should also strive to save taxpayers money by providing funding for the Federal Energy Management Program (FEMP) to improve efficiency in federal buildings.
- Congress should support net zero energy building RD&D that optimizes and combines the best high-value energy efficiency and on-site renewable and distributed energy applications in order to lower costs, emissions, and water use, and to compensate for deteriorating electric grid reliability and power quality. Congress should also support smart grid software and hardware RD&D as well as modular, inter-operable renewable and distributed energy (and hybrid systems) for electric grid interface as well as to harden critical infrastructure.
- Unlocking the vast hydropower potential of our rivers, oceans, tides and conduits requires funding the research and development initiatives that make innovative ideas a reality. The Department of Energy's Water Power Program is an important source of support for the researchers, scientists and developers working to grow hydropower's contribution to our country's clean energy resources. Continued investment in this program across all technologies is crucial to ensuring that the nation is on a path to reduce carbon emissions.
- Maintaining a commitment to fund the SunShot Initiative is a necessity to meet its goal of making solar energy cost-competitive with other sources of electricity by 2020. The SunShot Initiative focuses on cost reductions in all parts of the value chain, from materials research and manufacturing processes to permitting times and installation best practices and has helped the industry have its best year ever in 2012 while reducing the installed cost of solar by 20 percent.
- Continued investments in wind energy research and development 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. For these reasons we urge Congress to continue funding wind energy research and development through the DOE Wind Energy Program.
- Considering the growing use of natural gas in our energy economy the Department of Energy can play a substantial role in supporting research that will ensure natural gas is used, wisely, safely and efficiently. Therefore, the Council supports funding to be

directed towards research and development for natural gas technology development and improvement.

- Fuel cell and hydrogen technologies produce jobs in domestic and export markets and promote energy independence and environmental stewardship. The Council encourages Congress to continue to support the fuel cell and hydrogen program managed by the Office of Energy Efficiency and Renewable Energy and the Office of Fossil Energy to build upon the substantial progress made by these programs in cost reduction; the Council also encourages Congress to fully provide funding for the successful public-private partnerships to continue the industry's transition to market. In particular, the Council supports funding technology validation for hydrogen fueling infrastructure and fuel cell electric vehicles, as well as market transformation for stationary and backup power, material handling, refrigerated trucks, auxiliary power units, and the associated hydrogen infrastructure.

The Council looks forward to continuing its work with you and members of the Appropriations Committee in the coming weeks and months as you strive to get the most value out of limited federal dollars.

Sincerely,

A handwritten signature in cursive script, appearing to read "Lisa Jacobson".

Lisa Jacobson, President

**Cedar Bayou Navigation District, Texas
House Energy & Water Subcommittee on Appropriations
US Army Corps of Engineers**

We express full support of the inclusion of the full capability of the USACE for FY'14 to execute plans and specifications and negotiate the PED agreement with the Corps of Engineers for the project to deepen and widen Cedar Bayou, Texas.

FUNDS NEEDED IN FY'14- \$ 1 MILLION - PED

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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 10ft. deep and 100ft. 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 12ft. by 125ft. channel from the Houston Ship Channel Mile 3 to Cedar Bayou Mile 11 at the State Highway 146 Bridge. 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' and deepen it to 10' 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 Cedar Bayou Navigation District and the Port of Houston Authority, the busiest barge channel in the U.S. executed a Memorandum of Agreement on the importance of this project. In addition, Kirby Corporation, the largest barge company in the U.S. and a user of

Cedar Bayou channel, has also issued support of the project and echoed its importance.

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 on 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 FY '01 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. Total annual benefits are estimated to be \$4.8 M, with a net benefit of \$3 M. Congress thus far has appropriated nearly \$1.7 Million for this project and the local sponsor had paid in full the local share for construction.

There is currently a barge project operating on Cedar Bayou with another being built and additional interest for more such projects in future years. We would appreciate the subcommittee's support of the required \$1 Million .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 former Asst. Secretary of the Army John P. Woodley and OMB as a viable, economically justified and environmentally accepted project. The project is ready for completion of PED and construction.

**Testimony
David Modeer
General Manager
Central Arizona Project**

**House Committee on Appropriations
Subcommittee on Energy and Water Development**

**Support for \$15.4 million in Fiscal Year 2014 Funding for the Colorado River Basin
Salinity Control Program under Reclamation's Basinwide Program
March 29, 2013**

On behalf of the Central Arizona Water Conservation District (CAWCD), I encourage you to include \$15.4 million for the U.S. Bureau of Reclamation's Basin-wide Program for the Colorado River Basin in the Fiscal Year 2014 Appropriation bill. Continued funding for the Basin-wide Program, which supports salinity control projects, will help protect the water quality of the Colorado River that is used by approximately 40 million people for municipal and industrial purposes and used to irrigate approximately 4 million acres in the United States.

CAWCD manages the Central Arizona Project, a multi-purpose water resource development and management project that delivers Colorado River water into central and southern Arizona. The largest supplier of renewable water in Arizona, CAP diverts an average of over 1.6 million acre-foot of Arizona's 2.8 million acre-foot Colorado River entitlement each year to municipal and industrial users, agricultural irrigation districts, and Indian communities.

Our goal at CAP is to provide an affordable, reliable and sustainable supply of Colorado River water to a service area that includes more than 80 percent of Arizona's population.

These renewable water supplies are critical to Arizona's economy and to the economies of Native American communities throughout the state. Nearly 90% of economic activity in the State of Arizona occurs within CAP's service area. CAP also helps the State of Arizona meet its water management and regulatory objectives of reducing groundwater use and ensuring availability of groundwater as a supplemental water supply during future droughts. Achieving and maintaining these water management objectives is critical to the long-term sustainability of a state as arid as Arizona.

Negative Impacts of Concentrated Salts:

Natural and man-induced salt loading to the Colorado River creates environmental and economic damages. EPA has identified that more than 60 percent of the salt load of the Colorado River comes from natural sources. With the significant federal ownership in the Basin, most of this comes from federally administered lands. Human activity, principally irrigation, adds to salt load of the Colorado River. Further, natural and human activities concentrate the dissolved salts in the River.

The U.S. Bureau of Reclamation (Reclamation) has estimated the current *quantifiable* damages at about \$376 million per year to U.S. users with projections that damages would increase to more than five hundred million by 2030 if the program were not to continue. These damages include:

- a reduction in the yield of salt sensitive crops and increased water use to meet the leaching requirements in the agricultural sector,
- increased use of imported water and cost of desalination and brine disposal for recycling water in the municipal 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 cost of cooling operations 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, and
- 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.

Adequate funding for salinity control will prevent the water quality of the Colorado River from further degradation and avoid significant increases in economic damages to municipal, industrial and irrigation users.

History of the Colorado River Basin Salinity Control Program:

Recognizing the rapidly increasing salinity concentration in the Lower Colorado River and its impact on water users, Arizona joined with the other Colorado River Basin States in 1973 and organized the Colorado River Basin Salinity Control Forum (Forum). In 1974, in coordination with the Department of the Interior and the U.S. State Department, the Forum worked with Congress in the passage of the Colorado River Basin Salinity Control Act (Act) to offset increased damages caused by continued development and use of the waters of the Colorado River. Title I of the Salinity Control Act deals with the United States' commitment to the quality of water being delivered to Mexico. Title II of the Act deals with improving the quality of the water delivered to the U.S. users.

In the early years of the Program, Reclamation implemented salinity control through large projects which were funded with specific line item amounts. In 1995, Congress amended the Act

and created Reclamation's Basinwide Program. Under this program, Reclamation funds competitive proposals which will decrease the salt load to the Colorado River. Most of the received proposals target off-farm irrigation distribution systems such as canals and laterals. The lining or piping of canals and laterals prevents leakage into the groundwater and the dissolution and transportation of salts to the Colorado River and its tributaries. States provide a 30 percent cost share of the projects implemented by Reclamation.

The threat of salinity continues to be a concern in both the United States and Mexico. Most recently, on November 20, 2012, a five year agreement, known as Minute 319, was signed between the U.S. and Mexico to guide future management of the Colorado River. Among the key issues addressed in Minute 319 included an agreement to maintain current salinity management and existing salinity standards. The CAWCD and other key water providers are committed to meeting these goals.

Conclusion:

Implementation of salinity control practices through Reclamation's Basinwide Program has proven to be a very cost effective method of controlling the salinity of the Colorado River. In fact, the salt load of the Colorado River has now been reduced by roughly 1.2 million tons annually, reducing salinity in the Lower Basin by more than 100 ppm. However, shortfalls in recent Basinwide Program funding levels have led to inefficiencies in the implementation of the overall Program. The Plan of Implementation, as adopted by the states and approved by EPA, calls for 368,000 tons of additional salinity control measures to be implemented by Reclamation by 2030, or approximately 20,000 tons of new control each year. Therefore, additional funding is required in 2014 to meet this goal and prevent further degradation of the quality of the Colorado River with a commensurate increase in downstream economic damages.

CAWCD urges the subcommittee to include \$15.4 million for the U.S. Bureau of Reclamation's Basin-wide Program for the Colorado River Basin in the Fiscal Year 2014 Appropriation bill. 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.

**Statement of the Coalition of Northeastern Governors
 to the Committee on Appropriations
 Subcommittee on Energy and Water Development,
 and Related Agencies
 United States House of Representatives
 Regarding FY2014 Appropriations
 for the U.S. Department of Energy
 March 29, 2013**

The Coalition of Northeastern Governors (CONEG) is pleased to share with the Subcommittee on Energy and Water Development, and Related Agencies this testimony on FY2014 appropriations for the Department of Energy (DOE). Specifically, the governors request FY2014 funding of no less than the current levels for DOE's Office of Energy Efficiency and Renewable Energy, including at least \$50 million for the State Energy Program and at least \$174 million for the Weatherization Assistance Program, as well as current funding for the Office of Science and ARPA-E. In addition, the governors request at least \$105 million for the Energy Information Administration, and sufficient funding for maintenance and operation of the Northeast Home Heating Oil Reserve.

The governors recognize the fiscal challenges confronting Congress this year. Continued adequate federal funding for these energy programs and initiatives is crucial to improving the nation's energy security and independence while helping businesses and households across the nation reduce their energy costs. Maintaining funding for the programs of the Office of Energy Efficiency and Renewable Energy and the Office of Science is a sound investment that strengthens the foundation of the U.S. economy by creating new products and new jobs.

Office of Energy Efficiency and Renewable Energy

The governors request no less than the current level of funding for the Office of Energy Efficiency and Renewable Energy (EERE). The Office works in partnership with state and local governments, industry, universities and manufacturers to advance research into and greater use of energy efficiency and renewable energy technologies throughout the U.S. economy. These partnerships include such programs as building technologies that allow businesses and households to reduce their energy use and energy bills; the SunShot Initiative to help develop solar technologies that can be cost-competitive without public subsidies; and the EV Everywhere initiative to accelerate the development of clean energy transportation technologies that can lessen the use of foreign petroleum and reduce emissions from vehicles. EERE invests in next generation advanced manufacturing technologies to enhance the competitiveness of the U.S. manufacturing sector; and it leads a network of researchers to develop energy technologies for the cost-competitive generation of electricity from clean renewable sources such as solar, wind, biomass and water.

State Energy Program

The CONEG governors request at least \$50 million for the State Energy Program (SEP) in FY2014 with these funds provided as base SEP formula funding. This level of base funding is critical for the SEP to continue the successful state-federal-private sector partnerships for many

energy efficiency and conservation programs. The base SEP program is particularly important to smaller states since it allows them to significantly enhance the effective delivery of energy efficiency, conservation and renewable energy initiatives, and to leverage non-federal resources with federal funds.

This modest federal investment produces proven, measurable benefits toward achieving key national energy security and economic goals. The 56 state and territory energy offices use SEP funds, along with significant leveraged state and private sector funds, to implement vital energy efficiency, renewable energy, and alternative energy demonstrations in energy end-use sectors such as buildings, industry, agriculture, transportation and power generation. SEP funds are also vital to states as they work with other state-federal-local agencies and the private sector to prepare for natural disasters and to protect and strengthen critical energy infrastructure.

Each state uses SEP funds to carry out a wide variety of activities most appropriate for its unique energy profiles and requirements. The program provides meaningful economic benefits to business and consumers while supporting national environmental policy. Energy efficient retrofits and installation of solar systems on state buildings have saved taxpayers thousands of dollars in energy costs and have reduced carbon emissions. Creation and implementation of state energy efficiency building codes reduce energy use and costs for businesses and residents across the country. These funds also support initiatives to provide energy audits to businesses and households, and to provide public outreach and education to local residents, small businesses, farmers, and others to make them aware of opportunities to reduce energy consumption and energy bills. Using SEP funds, states also work with the private sector to showcase new clean technologies and to invest in renewable energy projects.

The SEP program yields proven energy and economic benefits. The most recent Oak Ridge National Laboratory cost-benefit analysis of the program found that every \$1 in SEP funding yields \$7.22 in annual energy cost savings, \$10.71 in leveraged funding, and annual energy savings of 1.03 million source BTUs. The DOE estimates that, based on recent appropriations levels, the SEP program results in an annual energy cost savings of \$300 million.

Weatherization Assistance Program

The CONEG governors request at least \$174 million in FY2014 for the Weatherization Assistance Program (WAP) which is an effective tool, immediately and long term, to alleviate the energy burden of low-income households by making their homes more energy efficient, safer and healthier. This level of funding is the minimum needed for the program to continue to carry out its mission of reducing the energy costs for low-income families, particularly for the elderly, people with disabilities, and children, by improving the energy efficiency of their homes while ensuring their health and safety. With approximately 38 million households eligible for assistance and 7.3 million served, the need for weatherization assistance is great, and much work lies ahead. Adequate funding for WAP is important in the Northeast where many low-income homes must heat with delivered fuels and cannot be served by existing utility-sponsored energy efficiency programs.

Low-income households pay a disproportionate share of their income on energy bills, often spending more than 19 percent of annual income on home energy compared to just 4 percent for

all other households. WAP funding is provided to all 50 states, the District of Columbia, U.S. territories and Indian tribal governments to manage a network of local weatherization providers that make cost-effective improvements to about 100,000 low-income households annually, permanently reducing energy costs for these vulnerable families.

Cost-effective weatherization measures are tailored to specific homes and climates. Some of these measures include simple yet effective services such as installing insulation, sealing ducts, tuning and repairing heating and cooling systems, and client education. The program uses advanced technologies and diagnostic equipment to develop a comprehensive cost-effective strategy to maximize energy and dollar savings. This “whole house” approach incorporates energy efficiency measures for a household’s heating and cooling systems, electrical system, and appliances. The program has become a leader in advancing these successful energy efficiency and diagnostic technologies, many of which have been adopted in the private sector and made available to the general public. Weatherization programs have demonstrated success in reducing the primary heating fuel use by an average of 23 percent per household. The U.S. Department of Energy estimates that depending on fuel prices, the annual energy bill of households receiving weatherization services is reduced by an average of \$437.

The program also has significant energy security and environmental benefits, making significant contributions to the goal of reducing the nation’s reliance on imported fuels. According to the National Association for State Community Service Programs (NASCS), weatherization measures reduce national energy demand by the equivalent of 18 million barrels of oil per year. For a home heated with natural gas, weatherization results in the mitigation of approximately 1.16 metric tons of carbon dioxide per year. The environmental benefits are even greater for those homes heating with fuel oil.

The non-energy benefits of the program are also substantial. Weatherization services increase the health and safety of low-income homes by detecting carbon monoxide and gas leaks in tested equipment, replacing unsafe equipment, and checking for moisture damage. The improvements enhance household safety, and lower energy costs lessen the potential for utility arrearages and service shut-offs. The program also fosters significant investments in local economies by creating jobs, offering professional training, and making housing more affordable in communities across the nation. For every \$1 invested, WAP returns \$2.51 in benefits, including \$1.80 in energy savings, according to DOE.

Office of Science

The CONEG governors request no less than current funding levels for the Office of Science. The basic research conducted and sponsored by the Office is vital to strengthening the nation’s leadership in science, and maintaining and enhancing U.S. competitiveness in the international field of scientific research. Basic research is a foundation to advancing the efficient production, delivery and use of energy throughout the nation’s economy. For example, the Office of Basic Energy Sciences has established 46 Energy Frontier Research Centers (EFRCs) involving universities, national laboratories, nonprofit organizations, and for-profit entities to integrate the expertise and talent of the nation’s leading scientists to conduct research toward meeting the critical energy challenges of strengthening the nation’s energy security and protecting the global environment. Energy Innovation Hubs are integrated research centers that facilitate the

collaboration of top scientists from academia, industry, and government to accelerate the path of critical energy technologies from basic laboratory research to pre-deployment of new technologies.

Advanced Research Projects Agency – Energy

The CONEG governors request no less than current funding levels for Advanced Research Projects Agency – Energy (ARPA-E). Innovation in energy technologies is vital to achieve the goal of reducing the nation’s reliance on imported energy sources through the development and delivery of environmentally sound domestic energy and the creation of diverse, clean, sustainable and affordable energy portfolios. ARPA-E was created to accelerate research and development on high-risk, high-reward energy technologies. This transformative R&D is done in partnership with industry and academia, focusing on innovative breakthrough technologies for the generation, storage, distribution, and use of energy. ARPA-E strives to maximize speed and efficiency, and its management principles and practices have been recognized by government and industry.

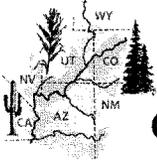
Energy Information Administration

The governors request at least \$105 million in FY2014 funding for the Energy Information Administration (EIA). As the independent statistical arm of the Department of Energy, EIA is the leading source for reliable impartial data, analyses and forecasts on U.S. energy production, demand, consumption, imports and prices. EIA’s workload has greatly increased as national and global energy markets undergo dynamic change, and as emerging technologies change the landscape of energy production and delivery. These changes have made the comprehensive, timely, objective information and analyses provided by EIA more vital than ever to state and federal policy makers as they develop critical energy, economic, security, and environmental strategies. For example, changes in natural gas markets and in environmental requirements for distillate fuels can affect the logistics chains that provide products to the Northeast, a region that is particularly vulnerable to supply disruptions and price volatility. EIA’s close monitoring of market developments and the accurate and timely price and supply data in EIA’s state heating oil and propane survey allows decision-makers to act quickly in the event of a supply disruption. EIA also collects, analyzes and distributes a wide range of information to help consumers make informed household decisions, understanding the interaction between energy, the economy and the environment.

Northeast Home Heating Oil Reserve

The CONEG governors request sufficient FY2014 funding for maintenance and operation of the Northeast Home Heating Oil Reserve. The Northeast is uniquely dependent on home heating oil. Over 25 percent of northeast homes use fuel oil for heating. These homes account for over 80 percent of residential heating oil use nationwide, making the region particularly vulnerable to the effects of supply disruptions and price volatility.

In the event of a supply disruption, the Reserve provides a buffer that allows additional time for supplies to reach the region. Reserve locations are strategically placed throughout the region to respond rapidly and efficiently to any emergency supply interruption.



Colorado River Basin SALINITY CONTROL FORUM

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OUTSIDE WITNESS TESTIMONY FY 2014 APPROPRIATION

TO: The Honorable Rodney Frelinghuysen, Chairman
 The Honorable Marcy Kaptur, Ranking Member
 House Appropriations Subcommittee on Energy and Water
 Development

SUBJECT: Continued Funding for the Colorado River Basin Salinity
 Control Program under Reclamation's Basinwide Program

FROM: Don A. Barnett, Executive Director
 Colorado River Basin Salinity Control Forum

DATE: March 12, 2013

Waters from the Colorado River are used by approximately 40 million people for municipal and industrial purposes and used to irrigate approximately 4 million acres in the United States. Natural and man-induced salt loading to the Colorado River creates environmental and economic damages. The U.S. Bureau of Reclamation (Reclamation) has estimated the current *quantifiable* damages at about \$376 million per year. Congress authorized the Colorado River Basin Salinity Control Program (Program) in 1974 to offset increased damages caused by continued development and use of the waters of the Colorado River. Modeling by Reclamation indicates that the *quantifiable* damages would rise to approximately \$577 million by the year 2030 without continuation of the Program. Congress has directed the Secretary of the Interior to implement a comprehensive program for minimizing salt contributions to the Colorado River. Reclamation serves as the lead federal agency in implementing the Program. **Reclamation** primarily institutes salinity control through its **Basinwide Program**. Funding levels have fallen behind in recent years, and a funding level of **\$15.4 million** is required in 2014 to prevent further degradation of the quality of the Colorado River with a commensurate increase in downstream economic damages.

EPA has identified that more than 60 percent of the salt load of the Colorado River comes from natural sources. The majority of land within the Colorado River Basin is federally owned and administered. In implementing the Colorado River Basin Salinity Control Act (Act) in 1974, Congress recognized

that most of the salt load in the Colorado River originates from federally owned lands. Title I of the Salinity Control Act deals with the United States' commitment to the quality of waters being delivered to Mexico. Title II of the Act deals with improving the quality of the water delivered to U.S. users. This testimony deals specifically with the Title II efforts.

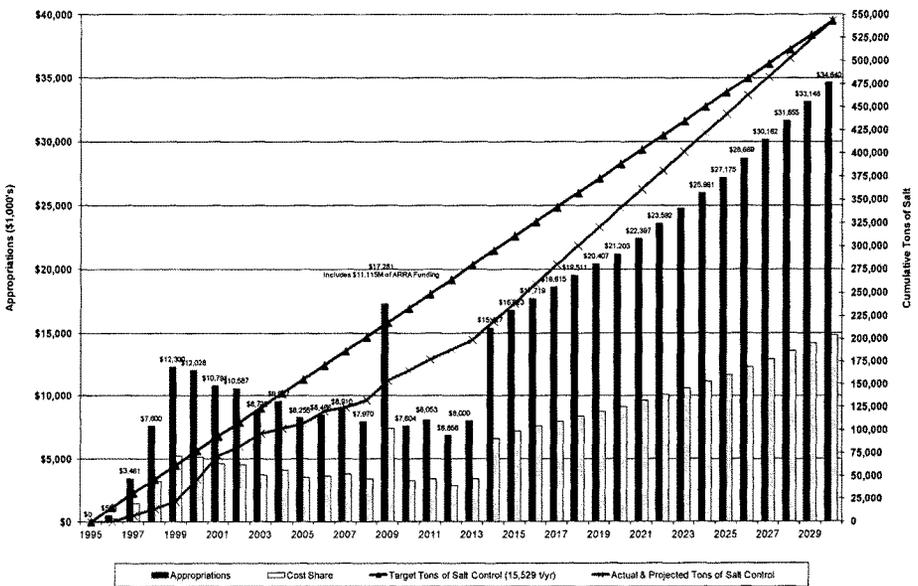
In the early years of the Program, Reclamation implemented salinity control through large projects which were funded with specific line item amounts. In 1995, Congress amended the Act and created Reclamation's Basinwide Program. Under this program, Reclamation funds competitive proposals which will decrease the salt load to the Colorado River. Most of the received proposals target off-farm irrigation distribution systems such as canals and laterals. The lining or piping of canals and laterals prevents leakage into the groundwater and the dissolution and transportation of salts to the Colorado River and its tributaries. It is more efficient for Reclamation to perform the off-farm distribution system improvements prior to NRCS treating the on-farm acres with salinity control practices (i.e., Reclamation should pipe a canal or lateral prior to NRCS putting a pressurized sprinkler system on farm). Shortfalls in recent Basinwide Program funding levels have led to inefficiencies in the implementation of the overall Program. The funding amounts identified above and in the graph below are required to get the Basinwide Program back on pace with the overall Program implementation needs.

Concentration of salt in the Colorado River causes approximately \$376 million in quantified damages and significantly more in unquantified damages in the United States and results in poor water quality for United States users. Damages occur from:

- a reduction in the yield of salt sensitive crops and increased water use to meet the leaching requirements in the agricultural sector,
- increased use of imported water and cost of desalination and brine disposal for recycling water in the municipal 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 cost of cooling operations 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, and
- 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.

The Colorado River Basin Salinity Control Forum (Forum) is composed of gubernatorial appointees from Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming. The Forum is charged with reviewing the Colorado River’s water quality standards for salinity every three years. In so doing, it adopts a Plan of Implementation consistent with these standards. The Plan of Implementation, as adopted by the states and approved by EPA, calls for 368,000 tons of additional salinity control measures to be implemented by Reclamation by 2030, or approximately 20,000 tons of new control each year. Based on current cost levels, Reclamation’s funding under its Basinwide Program needs to be \$15.4 million in FY2014. The level of appropriation requested in this testimony is in keeping with the adopted Plan of Implementation. 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.

**Basinwide Program: Controlling 20,286 tons salt/per year
Beginning FY 2014**



Shown in the above graph are the historic funding levels for Reclamation’s Basinwide Program up through FY2013 and needed funding levels for FY2014 through 2030 with the black bars showing the appropriated amount and the green bar showing the commensurate cost share. Shown with the blue line is the initial target of salinity control while the red line shows the actual control up through FY2013 and the required control from FY2014 through FY2030.

In summary, implementation of salinity control practices through Reclamation's Basinwide Program has proven to be a very cost effective method of controlling the salinity of the Colorado River and is an essential component to the overall Colorado River Basin Salinity Control Program. Continuation of adequate funding levels for salinity within this program will prevent the water quality of the Colorado River from further degradation and significant increases in economic damages to municipal, industrial and irrigation users. A modest investment in source control pays huge dividends in improved drinking water quality to nearly 40 million Americans.

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March 27, 2013

**Statement of
 the
 Colorado River Board of California
 to the
 House Committee on Appropriations
 Subcommittee on Energy and Water Development**

**Presented by
 Tanya M. Trujillo, Executive Director
 March 27, 2013**

**Support for Fiscal Year 2014 Funding of \$15.4 Million
 for the Department of the Interior - Bureau of Reclamation's
 Basinwide Salinity Control Program**

This statement is in support of Fiscal Year 2014 funding for the Department of the Interior's implementation of the Colorado River Basin Salinity Control Act of 1974 (Act) (P.L. 93-320). The Act authorized the Colorado River Basin Salinity Control Program, (Program), a comprehensive program for minimizing salt contributions to the Colorado River. In the Act, Congress designated the Department of the Interior's Bureau of Reclamation (Reclamation) to be the lead agency for salinity control in the Colorado River Basin. Reclamation primarily institutes salinity control through its Basinwide Program, which was established by Congress through an amendment to the Act in 1995. Funding levels for the Basinwide Program have fallen behind in recent years, and a funding level of \$15.4 million is required in 2014 to prevent further degradation of the quality of the Colorado River and the resulting economic damages.

Waters from the Colorado River are used by approximately 40 million people for municipal and industrial purposes and used to irrigate approximately 4 million acres in the United States. The Colorado River serves close to 20 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. Natural and man-induced salt loading to the Colorado River creates environmental and economic damages. Reclamation has estimated the current *quantifiable* damages with the Colorado River Basin as a result of increased concentrations of salt at about \$376 million per year. Modeling by Reclamation indicates that the *quantifiable* damages would rise to approximately \$577 million by the year 2030 without continuation of the Program.

The Colorado River Board (Board) is the state agency charged with protecting California's interests and rights in the water and power resources of the Colorado River system.

March 27, 2013

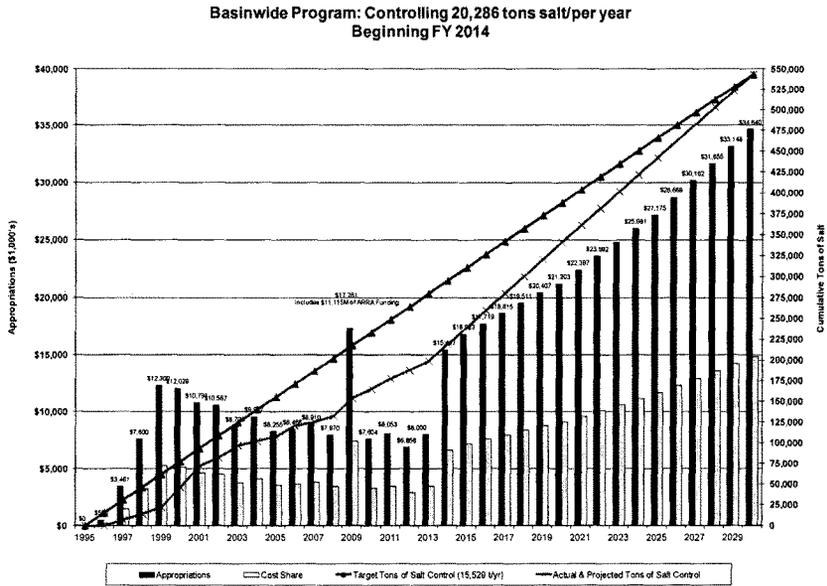
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The Board participates along with the other six Colorado River Basin states in the Colorado River Basin Salinity Control Forum (Forum), the interstate organization responsible for coordinating the Basin States' salinity control efforts. In close cooperation with the U. S. Environmental Protection Agency (EPA) and pursuant to requirements of the Clean Water Act (P.L. 92-500), the Forum is charged with reviewing the Colorado River's water quality standards every three years. The Forum adopts a Plan of Implementation consistent with these water quality standards. The level of appropriation being supported in this testimony is consistent with the Forum's 2011 Plan of Implementation. The Forum's 2011 Plan of Implementation can be found on this website: <http://www.coloradoriversalinity.org/docs/2011%20REVIEW-October.pdf>. If adequate funds are not appropriated, significant damages associated with increasing salinity concentrations of Colorado River water will become more widespread in the United States and Mexico. For example, damages occur from:

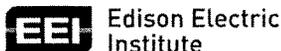
- a reduction in the yield of salt sensitive crops and increased water use for leaching in the agricultural sector;
- a reduction in the useful life of galvanized water pipe systems, water heaters, faucets, garbage disposals, clothes washers, and dishwashers, and increased use of bottled water and water 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.

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) programs working with landowners to improve on-farm irrigation systems. Shortfalls in Reclamation's Basinwide Program funding have led to inefficiencies in the implementation of the overall salinity control program. The funding amount

identified above, and in the graph below, are required to get the Basinwide Program back on pace with the implementation schedule identified in the 2011 Plan of Implementation.



The graph above shows the needed funding levels for FY-2014 through 2030 with the black bars showing the appropriated amount and the green bar showing the commensurate cost share. In order for the economic benefits associated with constraining the salinity levels within the Colorado River Basin, it is essential that Congress continue to provide funds to Reclamation's Basinwide program. Over the past twenty-nine years, the Colorado River Basin Salinity Control Program has proven to be a very cost-effective and collaborative approach to help mitigate the impacts of the salinity of Colorado River water. Continued federal funding of the Department of the Interior's elements of this important Basin-wide program is essential to maintaining this effort.



Written Statement
Submitted by Thomas R. Kuhn
President
Edison Electric Institute
Regarding Fiscal Year 2014 Appropriations
For the Department of Energy
To the Subcommittee on Energy and Water Development
House Committee on Appropriations
March 29, 2013

The Edison Electric Institute (EEI) respectfully submits this written testimony for the record to the House Appropriations Subcommittee on Energy and Water Development. We appreciate this opportunity to share our views on some of the Department of Energy's (DOE) programs for the fiscal year 2014.

EEI is the association of U.S. shareholder-owned electric companies. Our members serve 98 percent of ultimate electricity customers in the shareholder-owned segment of the industry and represent approximately 70 percent of the U.S. electric power industry.

Fuel Diversity is Critical

Embracing a diverse and balanced energy portfolio is crucial to affordable, reliable electric service. Electric companies use a variety of fuels to generate electricity, and tend to use the fuels that are most cost-effective and readily available in their region. Consequently, EEI has long advocated for an "all of the above" energy policy.

The electric power sector is the most capital-intensive industry in the United States and employs more than 500,000 workers. The investments utilities make in electricity infrastructure are an excellent source of job creation throughout the country. Last month, the Bipartisan Policy Center's (BPC) Strategic Energy Policy Initiative released its policy recommendations for the 113th Congress. On the topic of job creation, the BPC concluded:

"Energy is the lifeblood of the U.S. economy. All energy resources—energy efficiency, oil, gas, coal, nuclear, and renewable—are responsible for supporting economic growth and, in turn, employment throughout the economy. The country is dependent on the energy sector's skilled workforce to maintain the reliability and affordability of current energy systems. In the future, the energy-sector skilled workforce will be the lynchpin that will enable the country to achieve future public policy goals with respect to energy, the economy, and the environment as the next generation of energy technologies is developed and deployed." [Bipartisan Policy Center, "America's Energy Resurgence: Sustaining Success, Confronting Challenges," February 2013, p.6.]

As noted by the BPC report, electricity is a vital part of the infrastructure upon which our economy runs. In fact, industries and resources that run on electricity now account for 60 percent of our gross domestic product (GDP). These same segments account for 85 percent of GDP growth.

In formulating a FY 2014 budget that addresses our nation's economic, environmental and security goals, EEI respectfully requests that the Subcommittee direct adequate resources towards these critically important "all of the above" activities.

Expansion and Improvement of the Electric Grid

Working with the Department of Energy's Grid Tech Team (GTT), electric utilities have made steady progress in upgrading their customers' analog electric meters with digital smart meters. According to the Institute for Electric Efficiency (IEE), nearly 36 million smart meters had been installed across the United States, equivalent to a third of all households, as of May 2012. This is an increase from about a quarter of all households with smart meters in September 2011. To date, 22 electric utilities in 16 states have smart meters installed system-wide. By 2015, more than half of all U.S. households are expected to have a smart meter.

According to the BPC's Electric Grid Initiative recommendations of February 15, 2013, DOE's research and development (R&D) portfolio should continue to emphasize the relevance of smart meters to the development of a more efficient grid. EEI agrees with this objective. More broadly, Congress should continue its support for DOE deployment of advanced grid technologies and complete the lessons learned from its ongoing public-private deployment efforts. With Subcommittee support, DOE has already taken a number of steps in this area, including the establishment of the Smart Grid Information Clearinghouse, as well as case studies of specific projects. EEI urges strong support for funding that builds on these successes.

Electric Transportation

Electricity has the ability to transform the transportation sector, reducing our country's dependence on imported oil and improving our energy security. Plug-in electric vehicles (PEVs) and plug-in hybrid electric vehicles (PHEVs) make sense for a number of reasons, but one of them is that electricity costs about \$1 per gallon equivalent. High gasoline prices are not typical for winter—U.S. demand usually climbs when the weather warms up—but this year the national average price of a gallon of gasoline jumped 49 cents in January and February, the steepest increase ever seen for the first two months.

In the United States, the transportation sector imports over 40 percent of its petroleum. In 2011 alone, we sent more than \$330 billion overseas to purchase foreign oil. A February 2013 energy blueprint released by Senator Lisa Murkowski (R-AK), entitled *Energy 20/20: A Vision for America's Energy Future*, heralds sustained DOE investment in research and development of advanced vehicle technologies as "a chance for our country to diversify our fuel mix and break our dependence on foreign oil—and achieve energy independence from OPEC imports by 2020."

Importantly, transportation electrification opportunities are not confined just to passenger vehicles. In fact, over the next 20 years, it will be the commercial sector that drives growth, spurred by increasing electrification opportunities across a broad spectrum of industrial applications: shipyard cranes, warehouse forklifts, fleet vehicles, and any fueled application that can be converted to an electric motor.

Fossil Energy

EEI urges the Subcommittee to ensure that fossil energy research, development and demonstration (RD&D) receive as much funding as possible under existing tight budget constraints. We further urge maintenance of the Section 1703 DOE loan guarantee that was established with bipartisan support as part of the Energy Policy Act (EPAct) of 2005. As noted in Senator Murkowski's *Energy 20/20* report, the Section 1703 program "allows appropriations to cover credit subsidy costs, but in practice applicants have largely decided to self-pay these amounts." Moreover, "not a single loan guarantee has been closed under 1703."

EEI urges strong funding support for development and deployment of carbon capture utilization and storage (CCUS) integrated with electricity production. EEI member companies have invested hundreds of millions of dollars in first-of-a-kind demonstration projects that begin the process of integrating CCUS with electricity generation. AEP's Mountaineer Plants, privately funded by AEP and partners at more than \$100 million, started operation of a 20-megawatt (MW) project in September 2009, ceasing injection of carbon dioxide (CO₂) in May 2011, and currently performing post-injection monitoring. Southern Company's Plant Barry, a 25-MW project, began operations at the end of August 2012. Plant Barry is the result of a successful public-private partnership spearheaded by Southern Company and its project partners, including the Department of Energy. The total cost of Southern's demonstration project is more than \$111 million.

However, CCUS integrated with electricity production has not yet been demonstrated at commercial scale. CCUS has the potential to reduce greenhouse gas emissions associated with using fossil fuels only if certain economic, technical, regulatory and legal challenges are first resolved. Efforts to drive CCUS deployment forward must focus on alleviating these challenges as well as facilitating utility-scale demonstrations.

In addition to coal, EEI strongly advocates for adequate funding of policies that allow ready access to affordable natural gas for electric generation, including environmentally responsible development of shale resources by the gas industry throughout the United States. Natural gas is an increasingly important source for electric generation, especially given its availability and low prices. As a result, our industry is a strong proponent of developing our natural gas resources.

Nuclear Energy

Given that nuclear energy is the nation's largest source of carbon-free electricity production, and that construction of new plants will create tens of thousands of jobs, EEI urges strong support for the nuclear power loan guarantee program. Under DOE's implementation, participating borrowers pay the entire credit subsidy costs, making this program different from other loan programs administered by the Department.

EEI strongly supports nuclear R&D, including funding for the acceleration of technology development and commercialization of small modular nuclear reactors (SMRs). Due largely to their economy of mass production and reduced siting costs, SMRs could comprise a future share of the electricity generation mix.

Should the Administration's budget submission, expected April 8, call for reinstatement of the uranium enrichment decontamination and decommissioning tax, EEI respectfully requests the Subcommittee to reject this proposal. As stated in prior testimony, our industry has already met its financial obligations while the federal government failed to pay its required share of the cleanup funds. EEI appreciates the support of the Subcommittee in opposing this tax in past years.

Energy Efficiency

Electric utilities are by far the largest providers of energy efficiency in the U.S., responsible for 86 percent of the total customer-funded electricity efficiency expenditures nationwide. As a result of both new efficiency programs and the continuation of existing ones, total energy savings in 2011 were enough to power 9.3 million U.S. homes for one year. These programs also avoided the generation of 75 million metric tons of CO₂.

EEI supports continued essential funding for DOE energy efficiency programming. Over the next decade, we expect customer-funded energy efficiency budgets, expenditures and savings will continue to grow and budgets will exceed \$14 billion by 2025, up from \$7 billion in 2012.

Transmission Siting and Permitting

New electric transmission is needed for enhanced reliability, to serve regional markets, and to deliver electric power from renewable energy projects. EPAAct 2005 included provisions to improve the siting and permitting of transmission lines on federal lands. Unfortunately, those improvements have not achieved their full potential as quickly as needed, and a few provisions have been either undermined or delayed by the courts.

In October 2011, the Administration established the Rapid Response Team for Transmission (RRTT) to find ways to facilitate and expedite review of proposed transmission line projects on federal lands. DOE was integral to the establishment of the RRTT and a crucial participant in its work. EEI has been actively involved in the work of the RRTT. Last year, we provided training materials at the request of DOE. More recently, EEI has provided input to the agenda for the upcoming April 16, 2013, stakeholder conference on siting and permitting of transmission infrastructure.

The ultimate goal of the RRTT is to implement institutional changes in the way transmission is sited and permitted. Seven pilot projects were chosen in 2011 to identify opportunities for streamlining reviews and improving agency coordination, and the RRTT completed site visits to all pilot projects in 2012. From these visits, DOE and the RRTT will develop a list of systemic changes needed to improve federal siting and permitting. We urge adequate funding of this important activity.

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TESTIMONY OF
 BRIAN P. WYNNE, PRESIDENT
 OF THE
 ELECTRIC DRIVE TRANSPORTATION ASSOCIATION
 SUBMITTED TO THE
 ENERGY AND WATER DEVELOPMENT APPROPRIATIONS SUBCOMMITTEE
 OF THE
 HOUSE APPROPRIATIONS COMMITTEE

MARCH 29, 2013

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 FY2014 request for the Department of Energy's programs that advance electric drive technologies, including the Vehicle Technologies, Hydrogen and Fuel Cell Technologies Programs.

Our members represent the entire value chain of electric drive, including vehicle manufacturers, battery and component manufacturers, utilities and energy companies, and smart grid and charging infrastructure developers. Collectively, we are committed to realizing the economic, national security, and environmental benefits of displacing oil with hybrid, plug-in hybrid, battery, and fuel cell electric vehicles.

Transportation is responsible for 71% of the nation's total petroleum use and 33% of total carbon emissions. Almost half of the United States' petroleum needs are met with imported products, at a cost of \$451 billion in 2012. Over the longer term, increasing global demand will put upward pressure on oil prices, which has adverse implications for the U.S. economy. It's estimated that every \$10 per barrel increase costs the economy approximately \$75 billion.

The reliance of the U.S. transportation sector on a singular commodity, whose price is set in the global market, and whose availability is subject to significant geopolitical uncertainty, poses an unacceptable threat to U.S. energy and economic security. Development of domestic alternatives enhances energy security, protects consumers and the economy from price volatility, while increasing U.S. competitiveness technology and manufacturing. As the Committee's FY2013 report stated: "Research into next-generation automotive and fuel technologies that power vehicles with domestic energy sources such as natural gas, electricity, biofuels, and hydrogen can ... dramatically lower the impact of future high gas prices on Americans."

Recently released studies by the National Research Council (NRC) and the Transportation Energy Futures Project (a collaboration between the Department of Energy, National Renewable Energy Laboratory and the Argonne National Laboratory) found that large scale (80%) reduction in petroleum use and greenhouse gas emissions were possible with a portfolio approach to technology that included electric drive, hybrid, plug-in and fuel cell electric vehicles.

In addition, both reports found that a portfolio of policies and technologies is needed. Near, medium and longer term policy efforts will have to be utilized to enable transportation changes today and pave the way for next generation technologies. EDTA agrees that federal investment in electric drive and alternative transportation needs to include a portfolio of programs that accelerate adoption and deployment of vehicles and infrastructure, as well as what the NRC study calls “long view” research and development.

The Department of Energy’s (DOE) Vehicle Technologies program leverages private sector investments to promote innovation in transportation. Working with the diverse stakeholders of the electric drive industry, DOE is helping to accelerate technology breakthroughs, promoting investment in advanced vehicle supply chains and facilitating deployment of electric drive vehicles and infrastructure. Specifically, we support robust funding for Batteries and Electric Drive Technology and Vehicle and Systems Simulation & Testing activities, which include advancing next generation charging, wireless charging, systems integration, and codes and standards for communication with the grid.

The EV Everywhere Grand Challenge is also a critical part of a portfolio of research in batteries and power electronics, electric drive motors and components, and charging technologies that will reduce vehicle costs and increase range and charging capabilities. The program includes the Workplace Charging Challenge (in which EDTA participates) that promotes private investment in electric drive infrastructure by encouraging employers to provide charging options for their employees.

As the Transportation Energy Futures report emphasized, there are also necessary technology and efficiency gains to be made in the medium and heavy duty fleet. Electric drive in the commercial and transit fleet provides substantial fuel and emissions reductions, and also provides savings in maintenance for operators and consumers paying for transported goods and services. We ask that the Committee direct meaningful resources toward medium and heavy duty program activities, including work with industry partners to advance electrification and greater cooperation with regulatory agencies, such as the Environmental Protection Agency to ensure that compliance testing advances in tandem with regulated technologies.

We also support the role of the Batteries and Energy Storage Hub in the portfolio of programs to achieve large scale petroleum reductions. The Hub has been established to develop “radically new scientific approaches...for electrochemical storage, overcoming current manufacturing limitations through innovation to reduce complexity and cost.” This unique research resource is a key element of a portfolio approach that develops near and next generation solutions.

The Department of Energy is also working with industry to accelerate achievement of the benefits of fuel cell electric vehicles. Along with battery electrics, fuel cell vehicles (cars, trucks and non-road vehicles) are indispensable “zero emission/zero petroleum” options in the alternative fuel transportation portfolio. The industry is meeting aggressive cost, performance and deployment milestones as it pushes toward light duty vehicle commercialization in 2015. The ongoing partnership with the Department of Energy has already yielded substantial component cost reductions, including reducing the cost of automotive fuel cells by approximately 35% since 2008. Public/private research and development efforts have reduced costs in hydrogen production and delivery and have accelerated early commercialization in leading edge markets.

We appreciate the Committee’s acknowledgement of the importance of fuel cell technology in the FY2013 report, which stated that “the Committee recognizes the breakthrough research, cost reductions, and increased efficiencies and durability of fuel cell and hydrogen energy systems achieved

by this program that have accelerated the technologies' transition to market. Hydrogen and fuel cell technologies continue to be one of few possible ways to reduce Americans' exposure to future high gas prices, and the Committee continues to support research in this area.”

We ask that the committee continue that support, in particular in the areas of vehicles and infrastructure deployment activities and in early market development, including education, validation and enabling activities, at levels sufficient to enable the industry to build on technology and market achievements to meet 2015 commercialization targets.

Finally, we strongly support the DOE's deployment programs, including the Clean Cities program's work with local and regional coalitions to expand deployment of electric drive vehicles (hybrid, plug-in hybrid, battery, and fuel cell electric vehicles), other alternative fuel vehicles, and recharging/fueling infrastructure as a path to increased energy security. These efforts have a demonstrated record of success, including the displacement of more than 4.5 billion gallons of gasoline with alternative fuels since the program's inception.

With difficult choices to be made in allocating constrained resources, we respectfully ask that the Committee recognize the energy security imperative of diversifying our transportation sector. Working with the private sector, the Department of Energy's vehicle programs are critical to providing consumers, and the country, electric drive alternatives to oil today and in the future.

We thank you for your consideration.



March 26, 2013

Contact: Tyrone Spady, PhD

Email: tspady@faseb.org

Federation of American Societies for Experimental Biology

9650 Rockville Pike, Bethesda, MD 20814-3998 • www.FASEB.org

Testimony of the
Federation of American Societies for Experimental Biology
 On
FY 2014 Appropriations for the Department of Energy Office of Science
 Submitted to the
House Committee on Appropriations
Subcommittee on Energy and Water Development, and Related Agencies
Representative Rodney Freylinghuysen, Chairman
Representative Marcy Kaptur, Ranking Member

The Federation of American Societies for Experimental Biology (FASEB) respectfully requests an appropriation of a minimum of \$5.10 billion for the Department of Energy Office of Science (DOE SC) in fiscal year 2014. This figure would enable DOE SC to continue to support essential research programs that enhance human health and quality of life, invigorate the economy, bring the nation closer to energy independence, and drive scientific advances.

As a federation of 26 scientific societies, FASEB represents more than 100,000 life scientists and engineers, making it the largest coalition of biomedical research associations in the United States. FASEB's mission is to advance health and welfare by promoting progress and education in biological and biomedical sciences, including the research funded by DOE SC, through service to its member societies and collaborative advocacy. FASEB enhances the ability of scientists and engineers to improve—through their research—the health, well-being, and productivity of all people.

The United States Department of Energy's Office of Science (DOE SC) is the lead federal agency supporting fundamental energy research and the nation's largest supporter of basic research in the physical sciences. In addition to supporting research at over 300 institutions in all 50 states, DOE SC funds and manages ten world-class national laboratories. Research and development located at these national laboratories provide over 26,000 researchers with access to particle accelerators, advanced light sources, supercomputers, and other state-of-the-art instrumentation, much of this investigator-initiated research is in the biological sciences. In addition to serving as unique resources for academic and government scientists, the large-scale scientific tools at DOE SC facilities are critical to the research and development capabilities of over 40 Fortune 500 companies, including GE Healthcare, Exxon Mobil, Ford Motor, Boeing, and Pfizer.

Recent highlights from DOE SC-funded scientific breakthroughs include:

- *Accelerating Cancer Treatments:* Actinium-225 (Ac-225) is among the most highly sought after medical isotopes. It releases powerful alpha particles and degrades very quickly, which facilitates the highly localized destruction of cancer cells without damaging the surrounding healthy tissue. Unfortunately, actinium is extremely rare and, until recently, extremely expensive to produce. Researchers have developed a new and economical technique that can generate one year's production of the rare isotope in one week. Because Ac-225 is likely to be highly effective in the treatment of diffuse cancers, which currently are among the most untreatable, improved access could open new treatment options for legions of suffering patients.
- *Building Ultra-Strong Materials:* Stronger than steel, pound for pound, spider silk combines remarkable flexibility and extreme strength. Researchers used the high-brilliance X-ray beams of the Advanced Photon Source at Argonne National Laboratory to understand the basis of the material's unique properties. They found that spider silk's strength comes from crystalline lattices that make up about ten percent of the material, and its flexibility comes from amorphous regions that comprise the remaining 90 percent. This and other insights could, in turn, lead to improved approaches to making the thinner, stronger, and lighter materials of the future.
- *Maintaining Supercomputing Leadership:* This year the Department of Energy Oak Ridge National Laboratory unveiled the most powerful supercomputer ever built, Titan. Titan is about 35 percent faster than its nearest competitor and has the capacity to execute more than 27,000 trillion calculations per second. This capacity will allow scientists and engineers to simulate highly complex physical systems in greater detail and with more accuracy. Among the supercomputer's applications are nuclear energy and weapons management, materials science, and biomedical research. Another potential use for Titan is weather forecasting and climate modeling, both of which were essential components to the timeliness and accuracy of predictions of Hurricane Sandy and other extreme weather events.

Providing Unique Resources to the Scientific Community and the Nation

A source of abundant, safe, and sustainable energy is essential for the nation's future, and fundamental research supported by DOE SC provides the basis for discovering new energy technologies that can replace fossil fuels and reduce U.S. dependency on foreign oil. DOE SC-funded scientists and engineers are also making extraordinary discoveries in other areas of energy research that improve health, protect the environment, create economic opportunities, and strengthen national security. In addition, the national lab system advances strategic national goals and creates a research infrastructure unlike any other in the world. The advanced instrumentation and technical expertise supported by DOE SC make efficient use of unique research resources, bringing affordable access to researchers across the nation without duplication and at minimal cost to the nation and individual institutions.

With its crucial mission and unique research facilities, investment in DOE SC programs should be one of our highest research priorities. DOE SC user facilities benefit the entire research community by providing unparalleled scientific and technological capabilities. Now is the time

to provide robust federal funding for the fundamental energy research required to overcome one of the nation's most pressing challenges. Moreover, DOE SC funding has not grown despite an increase in demand for user facility access. The number of researchers using DOE SC facilities each year rose from 20,241 in FY 2007 to 25,876 in FY 2010, an increase of 27.8 percent. **To promote sustainability, FASEB recommends a funding level of at least \$5.1 billion for the Department of Energy's Office of Science in FY 2014.**

Written testimony from the Executive Committee of the Fermi National Accelerator Laboratory Users Organization to the U.S. House Energy and Water Development Appropriations Subcommittee in support of the Department of Energy Office of Science and the National Science Foundation

The Fermilab Users Executive Committee: Mary Anne Cummings (Muons, Inc.), Craig Group (University of Virginia), Sergio Jindariani (Fermilab), Daniel Kaplan (Illinois Institute of Technology), Ryan Patterson (California Institute of Technology), Gregory Pawloski (University of Minnesota), Breese Quinn (University of Mississippi), Lee Roberts (Boston University), Mandy Rominsky (Fermilab), Greg Snow (University of Nebraska-Lincoln), Nikos Varelas (Chair, University of Illinois at Chicago), Robert Zwaska (Fermilab)

We are the Executive Committee of the Users Organization of the Fermi National Accelerator Laboratory (Fermilab), located outside of Chicago, Illinois. We represent the approximately 2,500 scientists who perform research at Fermilab—our country’s premier particle-physics laboratory. Also known as high-energy physics (HEP), our field is the study of the fundamental particles that are the building blocks of the Universe, as well as their role in astrophysics, and the accelerators used in their study.

The U.S. Department of Energy Office of Science and the National Science Foundation support high-energy-physics research at U.S. national laboratories and universities. **More than 190 U.S. institutions in 44 states host physicists, astrophysicists, engineers, and accelerator scientists who work in high-energy physics.** More than half of these institutions are funded through the DOE Office of Science.

We urge the House to support sustained funding for fundamental science within the Department of Energy Office of Science and the National Science Foundation. We request that the portfolio of funding for fundamental research be balanced. High-energy-physics research is a key part of these programs and yields valuable benefits to our nation as described below.

Our field is undergoing a transition, Fermilab’s Tevatron accelerator program having come to a conclusion in 2011 after an extremely successful three decades and having showed evidence for the Higgs boson. The discovery of the Higgs boson in July 2012 at the Large Hadron Collider at CERN in Geneva, Switzerland, where U.S. physicists played a leadership role, the pioneering research with powerful beams of neutrinos produced at Fermilab, and the impressive progress in the study of dark matter and dark energy in our universe open a new era in high-energy physics. New programs are underway or just beginning that will provide the basis for vibrant, world-class research at Fermilab for the next several decades. This transition is a critical time for our field in the United States and requires sustained funding in order to maintain our role in world high-energy-physics research.

Impact of Budget Cuts

Continued funding of science research is critical to our nation. Severe budgetary cuts will have devastating effects that will be felt for decades. Science opportunities will be delayed or lost to other nations. Our reputation as the place to be for the best and brightest will be damaged.

We are concerned that the administration’s budget request for FY14 will include reductions in High Energy Physics within the overall total recommended for the DOE Office of Science. Over the past several years, the overall budget for High Energy Physics has been significantly

reduced. We are especially concerned about the additional reductions for Fermilab under the sequester against an already reduced FY13 budget. These reductions may require additional layoffs or furloughs. The proposed cuts come at a time when Fermilab has closed the Tevatron program, resulting in funding reductions in FY12 as well. The High Energy Physics program has worked to consolidate resources so as to focus on new projects, especially the Long Baseline Neutrino Experiment (LBNE). The resulting savings ought to be reinvested in Fermilab in order to maintain the United States' preeminent national laboratory and program at the forefront of the international high-energy physics community.

The largest and longest-lasting impact will be in our training of the next generation of scientists. Significant cuts will force us to train fewer students. They will demoralize our current students and post-docs, and some will quit. And we will no longer attract the best students. It will take a long time to recover from even a short-term cut to funding. These young people will be the foundation on which our economic growth depends. Without the advanced training offered by fields such as high-energy physics, they will lack the skills to develop the next technology or the next new industry. Or they will be trained in other countries, and that innovation will occur overseas. It is critical that we remain attractive to U.S. and foreign students now and in the future.

Value of High-Energy-Physics Research

In our modern economy, science and technology (S&T) drive growth, as detailed in the National Academies' report, *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*, its 2010 update, *Rising Above the Gathering Storm Revisited*, the recent book, *Knowledge and the Wealth of Nations*, and many other publications. Continued leadership in S&T fields is critical to our economic growth, national security, and position vis-à-vis the rest of the world. Innovation by a highly trained workforce is key.

Without new technological developments within the U.S., our economy will not grow and other countries will surpass us. But the most revolutionary technologies often require revolutions in our fundamental knowledge and understanding, or are invented in the research struggle of our most talented minds in pursuit of testing, measuring, and understanding new ideas and concepts. As an example, no one could have predicted the nature of our current society from the first studies of the electron at the dawn of the 20th century; however, we would not be communicating via email, fax, cellphone, or text messages without them. It has also famously been said that the light bulb could not have been invented by incremental improvements to the candle! Revolutionary technologies arise from new ways of thinking about society's problems—often derived from new experiments that ask new questions that cannot be answered using existing technology.

High-energy physics strives to understand the most fundamental aspects of nature. While we can rarely predict the outcome, the quest for knowledge has *always* led to numerous technological advances, a few of which are described below. What *is* predictable, is that we will educate and train some of the best and brightest students, who will contribute to our nation in many different arenas.

Value of Technology Development

While the primary purpose of high-energy-physics research is not the creation or development of new technology, our work often requires it in order to accomplish our goals. Many of our experiments require technology that does not exist before the project is undertaken. Therefore,

many of our researchers spend a significant part of their careers advancing high-tech particle detectors, developing complex computing algorithms, inventing new kinds of particle accelerators, or pushing the limits of high-speed electronics. Without continuous innovation we would not be able to complete our experiments. And once these advances are made, they are often used in fields as diverse as medicine, materials research, and manufacturing.

An example is the construction of the Fermilab Tevatron accelerator, which reigned as the world's most powerful device of its kind for nearly three decades. It required 1000 superconducting magnets, placed around a four-mile ring. Creating superconducting magnets requires superconducting wire. At the start of the project in the 1970s, it was known how to make such wire, but the industry needed in order to make it on a large scale did not exist. Fermilab researchers helped to build up that industry and advance its production techniques through a very successful joint government/business venture. Once the accelerator was complete in 1983, these businesses looked around to see what other projects could use superconducting wire. MRI machines that are now commonly used for medical imaging are an example. Because of the work of Fermilab in building the Tevatron, starting in the 1980s, commercial MRI scanners have now become widespread.

A current experiment led by Fermilab scientists is the Dark Energy Survey (DES). This requires a digital camera larger than any ever built. Its technological developments will ultimately influence the digital cameras available at your local electronics store as well as devices no one has yet dreamed up. A current R&D effort by a university/national laboratory collaboration is inventing new, cost-effective particle detectors with unique power to resolve events on the picosecond (trillionth-of-a-second) time-scale. These will also doubtless lead to new industrial, research, and medical applications.

High-energy physicists have invented particle accelerators and continue to steward their development. Our work requires the most powerful particle accelerators that can be built. However, thousands of accelerators are now used in many areas of technology. Of more than 30,000 particle accelerators throughout the world, only a small fraction are dedicated to high-energy physics. Most are used by industry or for medical treatment and diagnosis. The tire industry, for example, now uses particle accelerators to treat their tires, reducing both the amount of rubber needed (by three pounds per tire) and the amounts of chemicals used in the production process. This industry is both more efficient and better for our environment because of the application of particle accelerators. This success was unanticipated in the early days of accelerator development. Industrial accelerator applications now range from the manufacture of shrink-wrap plastic to the processing of industrial coatings and automobile parts.

Value of Science Education

The United States has long been the destination of choice for the best science students from around the world. Our universities provide an education that is second to none. Our national laboratories provide research opportunities that are unavailable elsewhere. Fermilab is an excellent example of this. Numerous students from foreign institutions travel to Fermilab to complete their research. Many of these students then choose to stay in the U.S. after completing their degrees.

Our students learn a variety of skills that are applicable in numerous fields. They learn to work on problems to which the answer is unknown and to adapt to unforeseen challenges. They learn skills in computer programming, data analysis, simulation of complex problems, and electronics

development, among others. They learn to work in teams as members of international collaborations, finding innovative solutions to challenging problems. They learn how to take a project from start to finish, write a document detailing it, and present it to an audience. The complex analytical thinking necessary to solve problems in fundamental science can't be taught in a classroom, but is nonetheless crucial for solving problems in business and industry in the 21st century.

Many of our students choose to continue their immediate careers as post-doctoral associates. This provides a post-graduate education that further develops their skills. Post-docs generally take on more complex projects and develop leadership and management skills. Most high-energy-physics experiments involve 20 to 3000 scientists and face challenges that are similar to those in many businesses.

Scientists trained in high-energy physics work in telecommunications, software development, aerospace, education, medicine, government, and finance, to name a few.

About 90% of our Ph.D. students put their skills to work in other fields. Private businesses are the largest and most diverse employers of scientists trained in high-energy physics. Several former HEP researchers have founded or led small and large companies, including Richard Wellner, chief scientist at Univa UD, a cloud management software company; Francisco Vaca, CEO of Vaca Capital Management LLC; George Coutrakon, former director of operations at Loma Linda University Medical Center and now Technical Director of the Northern Illinois Proton Treatment and Research Center; Homaira Akbair, CEO of SkyBitz, a satellite-based tracking company; Rolland Johnson, founder and president of Muons, Inc., an accelerator R&D company; and Nagesh Kulkarni, CEO of Quarkonics Applied Research Corp., a business and technology consulting company.

Our researchers are engaged in education at all levels and understand the importance of scientific literacy in our society. For example, hundreds to thousands of public lectures are given around the country by high-energy physicists each year. Our scientists visit local schools to share the excitement of science through physics demonstrations or presentations of their work. The QuarkNet program, funded through the Department of Energy Office of Science and National Science Foundation, trains K-12 teachers in 28 states in cutting-edge research that they can take into the classroom. More than 38,000 students attend Fermilab education activities each year.

Summary

Scientific research in general, and high-energy physics in particular, provides value to our nation that will be lost without sustained funding from the U.S. government. The knowledge that is gained will lead to future innovation that will maintain our world-class scientific capabilities. The path to that knowledge will lead to advances in technology that will help sustain our economic recovery. And the education of students from the U.S. and abroad will provide the knowledgeable workforce that will carry us through the next half-century.

It is critically important to maintain our world-class position in scientific research. The repercussions of severe cuts will be felt for a long time. We urge the House Energy and Water Development Appropriations Subcommittee to support our scientific research program for the long-term health of the nation, and to sustain funding to high-energy physics and priority projects at Fermilab in order to reinvest in this core discovery scientific discipline.



Morry Markowitz
President and Executive Director
Fuel Cell and Hydrogen Energy Association

House Appropriations Committee
Subcommittee on Energy and Water Development
Outside Witness Testimony
Fiscal Year 2014 Appropriations

On behalf of the members of the Fuel Cell and Hydrogen Energy Association (FCHEA), we are writing to urge your support for fuel cell and hydrogen energy programs in the Department of Energy for Fiscal Year 2014. These critical programs create jobs, stimulate exports, increase the efficient use of our nation's natural resources, reduce dependence on foreign oil and enhance energy security, while avoiding increases in criteria air pollutants and greenhouse gas emissions.

Your Committee has shown continued and consistent leadership in supporting a strong fuel cell research and demonstration program. The industry needs your leadership again. **As the Committee develops the FY2013 Energy and Water Appropriations Bill, we urge you to support at \$147.792 million the fuel cell and hydrogen programs managed by the Office of Energy Efficiency and Renewable Energy (EERE) and \$50 million in Fossil Energy (FE) organizations at the Department of Energy.** This investment will continue the substantial progress made by these programs in breakthrough research and cost reduction, and restore funding for the successful public-private market transformation program that has accelerated our industry's transition to market. Our proposal is fully consistent with the Committee's historical level of support for fuel cells and their fuels. A summary table of sub-program funding levels is attached. **In addition, we request that not less than \$50 million of the Vehicle Technologies program funding be directed for fuel cell electric vehicle (FCEV) and hydrogen fueling infrastructure research, development, and deployment—with \$25 million directed to infrastructure development and deployment, and \$25 million to vehicle development and deployment.** Congressional direction is needed to ensure that the DOE pursues a balanced portfolio of advanced vehicle technologies and infrastructure support.

We also request that not less than \$29 million of the Advanced Manufacturing program funding be directed for fuel cell and hydrogen energy manufacturing. Congressional direction is needed to ensure that the DOE pursues a balanced portfolio of advanced technology manufacturing, at a time when our industry is under intense pressure from overseas competitors.

Fuel cell and hydrogen technologies produce jobs and are a crucial part of the portfolio of advanced energy technologies that will help achieve the nation's oil and greenhouse gas



reduction goals. Fuel cells for stationary power and material handling equipment are commercially available and creating jobs today in domestic and export markets. The U.S. is poised to introduce FCEVs by 2015, as long as there is continued support for technology maturation, supplier development and infrastructure deployment. Advanced R&D in FE and EERE, market transformation, technology validation and hydrogen efficiencies in EERE are key components of the fuel cell industry's success.

The U.S. still has the worldwide lead in fuel cell manufacturing. Retaining and building upon that lead will be much cheaper and more productive than attempting to buy it back once it is lost, as we have seen in the case of solar, wind and battery technologies. Japan, Germany, Korea, and China have made it a national priority to develop these technologies and attract the skills and intellectual property to create a domestic clean energy business as a platform for a future export market.

In the U.S., fuel cell commercialization is within reach, and businesses are making the necessary investments to bring fuel cell-powered products to American customers. The rapid growth of shale gas production and reserves represents a historic shift, and goes a long way towards reducing or eliminating barriers to hydrogen infrastructure. By using the existing natural gas infrastructure and reformer technology, we have an opportunity to further enhance the commercialization of fuel cell and hydrogen energy technology.

What the industry needs now is help from the Department of Energy in leveraging these private dollars to help mature current markets and aid in creating a competitive landscape for budding ones. The National Academy of Engineering has suggested that an annual fuel cell and hydrogen energy research budget of at \$300 million would fully fund research and deployment programs. Realizing the budget constraints you are working under, the funding levels enumerated in this letter will send a strong, positive signal to other investors, companies investing in fuel cell products, auto makers, supply chain partners and potential customers.

Thank you for considering this testimony.

Regards,

A handwritten signature in black ink, appearing to read "M. B. Markowitz", with a stylized flourish at the end.

Morry Markowitz
President and Executive Director
Fuel Cell and Hydrogen Energy Association

Fuel Cell Technologies, EERE

Activity	FY 2010 Approp	FY 2012 Approps	FY 2013 Request	FCHEA FY 2013 Request	FY 2013 House-Passed Approps	FY 2013 Senate Committee- Passed Approps	FCHEA FY 2014 Request	Discussion
<i>Fuel Cell R&D</i>	\$ 75,609	\$ 43,556	\$ 36,899	\$ 43,556	*	*	\$ 43,556	Restore to 2012 level to accelerate cost reduction
<i>Hydrogen Fuel R&D</i>	\$ 45,750	\$ 33,785	\$ 26,117	\$ 33,785	*	\$ 34,000	\$ 33,785	Restore to 2012 level to accelerate cost reduction
<i>Technology Validation</i>	\$ 13,005	\$ 8,987	\$ 4,992	\$ 14,000	*	\$ 14,000	\$ 14,000	Cost shared funding for vehicle deployment
<i>Safety, Codes & Standards</i>	\$ 8,653	\$ 6,893	\$ 4,921	\$ 6,893	*	*	\$ 6,893	Restore to 2012 level, and direct not less than \$2,000,000 to the nationally-accredited codes and standards organizations, to accelerate safety and standardization, including fueling infrastructure, set-back distances, and below-ground storage for hydrogen fueling alongside other fuels, as well as for standalone applications.
<i>Systems Analysis</i>	\$ 5,408	\$ 2,925	\$ 2,922	\$ 5,408	*	*	\$ 5,408	Additional analysis on deployment
<i>Manufacturing R&D</i>	\$ 4,867	\$ 1,941	\$ 1,939	\$ 4,867	*	*	\$ 9,000	Supports optimization of manufacturing and system cost reduction, including R&D for hydrogen storage manufacturing
<i>Market Transformation</i>	\$ 15,005	\$ 3,000	\$ -	\$ 15,000	*	\$ 15,000	\$ 30,000	Cost shared funding for infrastructure, advanced demonstration and deployment
<i>Education</i>	\$ 2,000	\$ -	\$ -	\$ 2,000	*	*	\$ 2,000	Supports market transformation
<i>SBIR/STTR</i>	\$ 3,703	\$ 2,537	\$ 2,150	\$ 3,150	*	*	\$ 3,150	Supports small business innovation/cost reduction
	\$ 174,000	\$ 103,624	\$ 79,940	\$ 128,659	\$ 82,000	\$ 104,000	\$ 147,792	

* denotes that this program was not detailed in report language

(\$ thousands)

Activity	FY 2010 Approp	FY 2012 Approps	FY 2013 Request	FCHEA FY 2013 Request	FY 2013 House-Passed Approps	FY 2013 Senate Committee-Passed Approps	FCHEA FY 2014 Request	Discussion
<i>Solid State Energy Conversion Alliance (SECA)</i>	\$ 50,000	\$ 25,000	\$ -	\$ 50,000	\$ 25,000	\$ 25,000	\$ 50,000	Restore to 2010 level to retain active program for high efficiency power generation and low-cost CO2 sequestration

Vehicle Technologies, EERE

Activity	FY 2010 Approp	FY 2012 Approps	FY 2013 Request	FCHEA FY 2013 Request	FY 2013 House-Passed Approps	FY 2013 Senate Committee-Passed Approps	FCHEA FY 2014 Request	Discussion
<i>Vehicle deployment</i>	-	-	\$ -	\$ 30,000	-	\$ 14,000	\$ 30,000	Fuel cell electric vehicle deployment
<i>Infrastructure</i>	\$ -	\$ -	\$ -	\$ 20,000	-	\$ 15,000	\$ 20,000	FY 2013 Senate Approps bill funded infrastructure as part of Market Transformation. Hydrogen fueling infrastructure deployment in California, Northeast, and Hawaii
	\$ -	\$ -	\$ -	\$ 50,000	-	\$ 29,000	\$ 50,000	

Notes:

1. In the FY 2013 President's Budget Request, increases at EERE averaged 23.99%. (The Fuel Cell Technologies Program and the Hydropower Program, which were proposed for cuts, were excluded from this calculation.)
2. Industry's most urgent needs are for cost reduction (consistent with durability and product quality) to accelerate commercialization, and for support for early deployment and supporting infrastructure. Proposed program increases would all be invested toward these goals.

Testimony of

**Dave Koland, General Manager
GARRISON DIVERSION CONSERVANCY DISTRICT
Carrington, North Dakota**

Submitted to the

**COMMITTEE ON APPROPRIATIONS
US HOUSE OF REPRESENTATIVES**

**SUBCOMMITTEE ON ENERGY & WATER DEVELOPMENT,
AND RELATED AGENCIES
Rep. Rodney P. Frelinghuysen, CHAIRMAN**

**March 28, 2013
(Submitted for the Record)**

Mr. Chairman, Members of the Committee:

My name is Dave Koland; I serve as the general manager of the Garrison Diversion Conservancy District. We are charged with implementing the Pick-Sloan Missouri Basin Program/Garrison Diversion Unit, Bureau of Reclamation, Water and Related Resources, Department of the Interior. The mission of Garrison Diversion is to provide a reliable, high quality and affordable water supply to the areas of need in North Dakota. Over 77% of our state residents live within the boundaries of the District.

In return for accepting a permanent flood on 500,000 acres of prime North Dakota Missouri river bottom land, the federal government promised the state and tribes that they would be compensated as the dams were built. The dams were completed over 50 years ago and still we wait for the promised compensation.

The Municipal Rural & Industrial (MR&I) program was started in 1986 after the Garrison Diversion Unit (GDU) was reformulated from a million-acre irrigation project into a multipurpose project with emphasis on the development and delivery of municipal and rural water supplies. The statewide MR&I program has focused on providing grant funds for water systems that provide water service to previously unserved areas of the state. The state has followed a policy of developing a network of regional water systems throughout the state.

NORTH DAKOTA'S SUCCESS STORY

Rural water systems are being constructed using a unique blend of local expertise, state financing, rural development loans and MR&I grant funds to provide an affordable rate structure; and the expertise of the Bureau of Reclamation (BOR) to deal with design and environmental issues. The projects are successful because they are driven by a local need to solve a water quantity or quality problem. The solution to the local problem is devised by the community being affected by the problem. The early, local buy-in helps propel the project through the tortuous pre-construction stages.

The desperate need for clean, safe water is evidenced by the willingness of North Dakota's rural residents to pay water rates well above the rates EPA considers affordable. The EPA Economic Guidance Workbook states that rates greater than 1.5% of the median household income (MHI), 1.5% of \$51,704=\$77.56 in 2012, are not only unaffordable, but also "may be unreasonable".

The average monthly bill on a rural water system for 6,000 gallons of water is currently \$70.65. The water rates in rural North Dakota would soar to astronomical levels without the 75% grant dollars provided by the MR&I program. For instance, current rates would have to average a truly unaffordable \$282.60/month or a whopping 6.6% of the MHI. Rates would have ranged as high as \$364.00/month or a prohibitive 8.5% of MHI without the assistance of the MR&I program.

The MR&I program consists of both Indian and non-Indian funding. The Dakota Water Resources Act of 2000 authorized an additional \$200 million for each of these MR&I programs. It is our intent that each program reaches the conclusion of the funding authorization at the same time. We believe this is only fair and have worked with the North Dakota Tribes toward this goal.

The MR&I program consists of a number of projects that are independent of one another. They are generally over \$50 million in total construction cost. Some are, of course, smaller and others somewhat larger; one that is considerably larger is the Southwest Pipeline Project (SWPP). Construction of the project began in 1981. The construction schedule for the last phase has finally begun. Numerous projects on the reservations are also ready to begin construction. It will be a delicate challenge to balance the funding needs of these projects. Nevertheless, we believe that once a project is started, it needs to be pursued vigorously to completion. If it is not, we simply run the cost up and increase the risk of incompatibility among the working parts.

An example of the former would be the certain impact of the increased cost of construction over time through inflation but also by protracting the engineering and administration costs.

The Dakota Water Resources Act of 2000 authorized \$200 million for the construction of facilities to meet the water quality and quantity needs of the Red River Valley communities. Over 42% of North Dakota's citizens rely on the drought-prone Red River of the North as their primary or sole source of water. It is my belief that the final plans and authorizations should be expected in approximately two years. The only federal funding needed at this time will be for a biota treatment plant to comply with the Boundary Waters Treaty of 1909.

This major project, once started, should also be pursued vigorously to completion. The reasons are the same as for the SWPP project and relate to good engineering and construction management. Although difficult to predict at this time, it is reasonable to plan that the RRVWSP features, once started, should be completed in approximately five years.

It is simply good management to blend these needs to avoid drastic hills and valleys in the budget requests. By continuing the construction of SWPP and the tribal projects which are ready for construction now, some of the pressure will be off when the RRVWSP biota treatment plant funding is needed. A smoother, more efficient construction funding program over time will be the result.

The Bureau of Reclamation, Rural Development, Garrison Diversion Conservancy District, North Dakota State Water Commission and local rural water districts have formed a formidable alliance to deal with the lack of a high quality, reliable water source throughout much of North Dakota. This cost-effective partnership of local control, state-wide guidance and federal support has provided safe, clean, potable water to hundreds of communities and thousands of homes across North Dakota.

PUBLIC WITNESS TESTIMONY by the HEALTH PHYSICS SOCIETY

On behalf of the Health Physics Society (HPS), this written testimony for the record for fiscal year 2014 is submitted. By it, the Society stresses the critical importance of continued funding for the Integrated University Program (IUP) appropriated to the Nuclear Regulatory Commission (NRC) to support health physics programs, students, and faculty. This continued support is necessary to address the shortage of health physicists, which is an issue of extreme importance to the safety of our nation's workers, members of the public, and our environment.

Health Physics is the profession that specializes in radiation safety, which is necessary for the safe and successful operation of the nation's energy, healthcare, homeland security, defense and environmental protection programs. Although radiation safety is fundamental to each of these vital national programs, there is no single federal agency that serves as a home and champion for the health physics profession as this profession cuts across all these sectors. However, health physics is necessary for all these sectors to exist as it supports the principle disciplines in these programs that are championed by multiple federal agencies, such as engineers, medical professionals, law enforcement professionals, military personnel, and environmental scientists.

As the nation's development and use of radioactive materials grew following the end of World War II, the nation's demand for health physicists increased in the areas of energy, defense, public health, and environmental protection. This need was largely supported by student fellowships and scholarships largely from the Atomic Energy Agency (energy and defense) and Public Health Service (public health and environmental protection). However, over the years agencies and their missions changed, the nuclear power industry faltered and the Department of Energy (DOE) nuclear weapons complex downsized following the end of the cold war. This resulted in the academic program support from federal agencies dwindling until the last remaining support from DOE was terminated in FY99. With this dwindling

support, the supply of new health physicists declined and the age of existing health physics workforce increased despite the continued need for health physicists in energy, defense, public health, and environmental protection programs as well as an exponential growth in the medical and academic community. This resulted in a human capital crisis in health physics.

With the realization of the growing health physics human capital crisis in the early years of the 21st century, Congress and the DOE took action to add support to the nuclear engineering academic programs through DOE programs in the Office of Nuclear Energy (NE) and eventually agreed that this was an appropriate support mechanism for health physics academic programs in institutions across the country. In fiscal year 2005, Congress appropriated money to DOE-NE for a health physics fellowship and scholarship program as part of the University Reactor Fuel Assistance and Support budget item. Shortly thereafter, Congress reinforced its position that DOE needed to support the health physics academic programs in provisions of Section 954 of the Energy Policy Act of 2005.

Despite the need for an increased supply of health physics professionals continued to exist, the DOE ceased funding the Congressionally authorized DOE-NE health physics fellowship and scholarship program after only two fiscal years of funding the programs at minimal levels.

In fiscal year 2008, Congress, led by the House Subcommittee on Energy and Water Development, and Related Agencies, transferred appropriations for a Nuclear Education Program, including health physics programs, to the NRC. The Health Physics Society applauds this insightful action. The NRC does have a vested interest in the radiation safety due to its own activities associated with most of the sectors covered by the health physics profession. The NRC quickly addressed the demands of starting a new education support program by opening two grant opportunities for student and faculty support. Not only has the NRC ably administered this

program but also it has brought needed assistance to both students and academic programs at colleges and universities throughout the entire country.

In order for the Committee to be able to put a human face on this program, Nicole Martinez, MA, a recipient of funding under this program, offers the following testimonial for your consideration.

“I attended Texas A&M University for my undergraduate degree and graduated Summa Cum Laude in December 2004 with a B.S. degree in Applied Mathematical Sciences. Upon graduation, I was commissioned in the United States Navy and became an instructor at Navy Nuclear Power training Command in Goose Creek, South Carolina. After separating from the USN in 2008, I took a job with General Physics Corporation in Montrose, Colorado. After a little over a year of working for GP, I decided to attend graduate school for health physics at Colorado State University.

After my first semester, my original advisor left the university and there was no longer funding available for me. As such, I began looking for jobs and was planning on leaving the program. However, a grant funded by the Nuclear Regulatory Commission under the Integrated University Program came in, which enabled me to remain in school. My master’s research focused on the occupational radiation dose received by persons working with veterinary positron emission tomography at CSU’s veterinary teaching hospital. I defended my thesis in the summer of 2011 and decided to continue on for a PhD. As part of a collaborative effort with scientists at Savannah River Site, I spent a little over a year in an internship at Savannah River National Laboratory, which included data collection for my dissertation project; my current research is in the remote sensing of plant stress, specifically reflectance spectroscopy, which has potential applications in phytoremediation. I passed my preliminary exams during the summer of 2012, and I returned to Fort Collins in January 2013 to begin data analysis and the writing process at CSU.”

Without assistance from the NRC, our country would not have the benefit of Ms. Martinez's talents, and those of her fellow scholarship recipients, in the field of health physics for the future. Only with support from the NRC will we be able to continue to be able to maintain the academic infrastructure and scholarship funding that will train tomorrow's health physicists.

The Committee's favorable consideration of this request will help meet our nation's radiation safety needs of the future.

TESTIMONY OF ROBERT S. LYNCH, COUNSEL AND ASSISTANT
SECRETARY/TREASURER,
IRRIGATION & ELECTRICAL DISTRICTS ASSOCIATION OF ARIZONA,
BEFORE THE HOUSE COMMITTEE ON APPROPRIATIONS,
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT,
ADDRESSING FY-2014 APPROPRIATIONS FOR THE BUREAU OF RECLAMATION
AND THE WESTERN AREA POWER ADMINISTRATION

MARCH 29, 2013

The Irrigation & Electrical Districts Association of Arizona (IEDA) is pleased to present written testimony regarding Fiscal Year 2014 (FY-2014) appropriations for the Bureau of Reclamation (Reclamation) and the Western Area Power Administration (Western).

IEDA is an Arizona nonprofit association whose 25 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 in its 51st year to represent water and power interests of Arizona political subdivisions and other public power providers and their consumers.

Bureau of Reclamation

IEDA has not been able to review the Reclamation Budget since it has not yet been released. We would hope that the Subcommittee could find a way to allow supplemental testimony once it is released. Having said that, we anticipate that the FY-2014 budget will not adequately address the enormous backlog of needs of the agency's aging infrastructure. We support the important projects and programs that have been included in prior budgets and are likely to be included in the FY-2014 budget. We are especially mindful that the Yuma Desalting Plant 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, in conjunction with the new arrangements with the Republic of Mexico contained in Minute 319 to the 1944 Treaty.

We also wish to call to the Subcommittee's attention several other issues of concern to us and to other Arizona water and power customers:

First, we want to congratulate Congress for extending the Upper Colorado River Recovery Implementation Plan. That Plan focuses on recovering three (3) endangered fish in the Colorado River and its tributaries above Lake Powell. It is a three party agreement: Federal agencies with appropriations, monies from the four Upper Colorado River Basin States (Colorado, New Mexico, Utah and Wyoming), and power revenues from our members and other Colorado River Storage Project customers. Without the extension there could be no federal appropriation dollars to continue the program. Passage of the bill honors the "deal" that we cut to keep the Endangered Species Act (ESA) from being used to attack our water and hydropower resources. No money,

no Plan. Reclamation appropriations should be provided and the Subcommittee should recognize that the Plan is an essential and beneficial Colorado River partnership.

Second, we continue to be concerned about Reclamation's spending on post-9/11 security costs. Congress gave Reclamation specific directions on this subject several years ago. That included non-reimbursability of certain costs. However, Congress did not instruct Reclamation with regard to how this program should be implemented. In a new age of cyber crime and cyber espionage, facility and operational security are very important. We believe a close review of the ongoing levels of staffing and other expenses related to this subject is in order.

Western Area Power Administration

IEDA also has not reviewed the proposed budget for the Western Area Power Administration due to its unavailability. We anticipate that the agency budget will once again include only limited appropriations for construction funding proposed for FY-2014. We believe this shortfall is unfortunate. Western has over 17,000 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. Just as importantly, these facilities are requiring increased investment for repairs and replacements. Moreover, the region is projected, by all utilities operating in the region, to be short of available generation in the ten-year planning window that utilities and Western use.

The appropriation request we anticipate in this category will not come even close to addressing existing transmission construction needs. 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. Customer contributions in the existing environment will not keep pace with the need the longer the current situation goes on.

The President's Budget, once again, will likely assume that unmet capital formation needs will be made up by Western's customers. 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 significant non-federal capital formation require years to develop. One such program that was 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. Moreover, scoring and "cut/go" rules are providing major disincentives for Western's customers and others in this regard.

There also are impediments to using existing federal laws in facilitating non-federal financing of federal facilities and repairs to existing federal facilities and Congress should examine them. Artificially assuming 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.

While you are considering this subject, we hope you will ask Western for detailed information about the costs associated with running its headquarters, a significant amount of the administrative costs passed on to its customers. Western has been meeting with customers to discuss capital financing, but has rebuffed our requests for explanation of its central overhead.

There is one subject about which we urge you not to provide funding. On March 16, 2012, Secretary of Energy Chu announced that Western would be participating in a gigantic Energy Imbalance Market (EIM) in the western United States. This is an untested, unanalyzed, unproven boondoggle being promoted to force utilities in the West to add layer upon layer of bureaucracy over their existing operations, when doing so elsewhere has only escalated electricity costs and hampered economic recovery. We urge you to expressly prohibit Western from expending funds to participate in this attack on the West's economy and to require peer-reviewed scientific and economic analysis before any money is spent to facilitate Western's participation in an EIM.

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.



THE
LITTLE RIVER
DRAINAGE DISTRICT

FLOOD CONTROL & DRAINAGE
SINCE — 1907

BOARD OF SUPERVISORS

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Paul T. Combs, Vice-President
A.C. Riley James
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Assistant Treasurer
Stephanie L. Hasey
Assistant Secretary
Lynn N. Book
Attorney

STATEMENT OF
DR. SAM M. HUNTER, PRESIDENT
THE LITTLE RIVER DRAINAGE DISTRICT
MARCH 27, 2013

HOUSE APPROPRIATIONS COMMITTEE
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

My name is Sam M. Hunter, D.V.M. I am a veterinarian, landowner, and farmer, and I reside in Sikeston, Missouri. I am the President of the Board of Supervisors of The Little River Drainage District, the largest such entity in the nation. Our district serves as a drainage outlet and provides flood control to parts of seven counties in southeast Missouri. We also provide flood protection to a sizable portion of northeast Arkansas. Our district is funded solely by the annual assessment of benefits of more than 3,500 landowners. Today, I would like to discuss funding for the U.S. Army Corps of Engineers, more specifically the Mississippi River and Tributaries (MR&T) which is a line item in the Civil Works budget.

This is a reminder to the U.S. House of Representatives Appropriations Subcommittee on Energy and Water Development of the Mississippi River and Tributaries (MR&T) system performance in 2011 and 2012. The investment protected by the MR&T system during the 2011 flood was \$234 billion with cumulative damages prevented by the MR&T system being \$612 billion and a return on federal investment of 44 to 1. These prevented damages do not include the return for low water benefits. The hydraulic improvements made by the construction of dikes, cutoffs and channel improvements that allowed a record flood by volume to flow at a lower elevation, are the same improvements that allowed barge traffic to move during the near record lows experienced throughout the Mississippi River in 2012. **Because of these facts we respectfully request an appropriation in the sum of 500 million dollars for the Mississippi River and Tributaries Project.**

First, let me thank the Congress for the support and funding you have provided in the past. This funding proves your awareness of the importance of flood control projects throughout the Mississippi River Valley.

The Mississippi River and Tributaries Project was authorized following a record flood in 1927 that inundated more than 26,000 square miles of the Mississippi River Valley. Over 700,000 people were left homeless and many lives were lost. Most, if not all, East-West commerce was stopped and it adversely affected the economy and the environment of our nation. After that devastating event Congress in its infinite wisdom passed a bill and established the Mississippi River and Tributaries Project and authorized the U. S. Army Corps of Engineers to develop a plan to prevent such a disaster in the future. This project currently is a separate line

HONORARY SUPERVISOR

E.B. Gee, Jr.
Blytheville, AR

item in the budget. To remove it will destroy the continuity of this highly valued and much needed project.

To date the MR&T Project has prevented flood damages and provided other benefits resulting in a current benefit/cost ratio of over \$44 to \$1. Truly this is a wise investment for our nation. Likewise, countless lives have been spared due to the construction of this great project. Also, our nation receives nearly one billion dollars of navigational benefits each year due to this project. It is readily seen this project had merit from the beginning and continues to reward the citizens not only of the valley itself but the citizens of the entire nation. It is a wise investment for this country and it is good for our economy. It will be a vital link to the defense of our nation in the event of an attack by our enemies. This project must be targeted for swift completion and then properly maintained. What an investment for our great nation this project has been! Find any other project of any nature which approaches this ratio.

The performance of the comprehensive Mississippi River and Tributaries system and the Ohio Valley reservoir system during the 2011 flood on the lower Mississippi River validates the wise investment the nation made to prevent another calamitous natural disaster like the 1927 flood, the devastating event that changed America and forcibly unified its people to support protection of lives and property from the fury of the river. The MR&T system performed as designed, despite rainfall exceeding 600 to 1,000 percent of the normal average rainfall in a two-week period from April 21-May 3 over a significant portion of six states that coincided with the arrival of the upper Mississippi spring snowmelt crest. The significant flood event established many new record discharges and stages along the lower Ohio and Mississippi rivers. Unlike the 2011 flood, the Mississippi River during the benchmark and calamitous Great Flood of 1927 inundated most of the alluvial valley. Like the toppling of a series of dominoes, one overmatched levee after another burst under the unprecedented pressure exerted by the swollen river.

At a time when we need to stimulate our economy, at a time that safety from terrorist activities needs to be enhanced and at a time that many in our nation are concerned about cleaner air, cleaner water, etc., we have a great opportunity to meet those needs. We must make sound investments into our infrastructure which will give back more monies to the taxpayers of this country than was invested while at the same time increasing our defense capabilities should our nation be attacked from an outside force.

Local interests have done their part in providing rights of way, roads, utilities and the like. Our government now needs to fulfill their obligatory part of the project and bring it to completion as quickly as possible.

We believe the Corps could adequately use 500 million dollars each year for maintenance and construction within the MR&T. We realize there are budgetary restraints this year and respectively request Congress to approve adequate funding for maintenance and construction for the MR&T. The MR&T improvements I have talked about thus far have been the benefits for flood control. However, these benefits are also realized during the low flow event currently being experienced on the Mississippi River. The hydraulic improvements that allowed a record flood event to pass at a 0.8 foot lower elevation in 2011 than in 1937, also allow barge traffic and a

near record low event experienced in 2012. If it were not for the MR&T system improvements barge traffic during the 2012 low water event would have been nonexistent.

We thank you again for your understanding of our needs and the importance of the MR&T system by not allowing FEMA to charge mandatory flood insurance as defined below:

SEC. 107. MANDATORY COVERAGE AREAS.

(a) Special Flood Hazard Areas- Not later than 90 days after the date of enactment of this Act, the Director shall issue final regulations establishing a revised definition of areas of special flood hazards for purposes of the National Flood Insurance Program.

(b) Residual Risk Areas- The regulations required by subsection (a) shall--

(1) include any area previously identified by the Director as an area having special flood hazards under section 102 of the Flood Disaster Protection Act of 1973 (42 U.S.C. 4012a); and

(2) require the expansion of areas of special flood hazards to include areas of residual risk, including areas that are located behind levees, dams, and other man-made structures.

(c) Mandatory Participation in National Flood Insurance Program-

(1) IN GENERAL- Any area described in subsection (b) shall be subject to the mandatory purchase requirements of sections 102 and 202 of the Flood Disaster Protection Act of 1973 (42 U.S.C. 4012a, 4106).

(2) LIMITATION- The mandatory purchase requirement under paragraph (1) shall have no force or effect until the mapping of all residual risk areas in the United States that the Director determines essential in order to administer the National Flood Insurance Program, as required under section 19, are in the maintenance phase.

Thank you for understanding the tremendous negative impact this piece of legislation would have had on the entire Mississippi River Valley. Billions of dollars already spent on flood control structures would be negated because of needless MANDATORY flood insurance premiums. Please remember the 1928 flood control act recognizes the investment of the local people by initial construction and taxation of themselves for maintenance. This investment was over 200 million dollars in 1928 and totals more than 17 billion dollars today, making the total investment in the MR&T over 30 billion dollars. Because of this, it is still necessary to discuss the new policies being implemented by the Federal Emergency Management Agency in their Map Modernization Program.

The policy creates a New Zone "X" (shaded) designated area. This new designation shows all areas behind a levee as an unsafe place to live and recommends, among other things, an evacuation plan and flood insurance.

This designation renders all work done by local and federal organizations for the last 100 years useless. Even if our levees are Federal Levees and have received an outstanding maintenance award through the U.S. Army Corps of Engineers inspection process, this Zone "X" (shaded) designation will be placed on all new flood maps. This will needlessly destroy

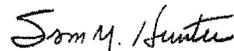
economic development for over 22,000,000 acres of land in this country. Please put a stop to this new Zone "X" (shaded) designation. Please do not use a "one size fits all" approach and place false fear in the minds of people living behind levees. **THE INSURANCE INDUSTRY WOULD LOVE NOTHING MORE THAN THE ABILITY TO COLLECT FLOOD INSURANCE PREMIUMS WITHOUT THE POSSIBILITY OF PAYING CLAIMS BECAUSE OF THE HARD WORK OF THE U.S. ARMY CORPS OF ENGINEERS AND LOCAL LEVEE AND DRAINAGE DISTRICTS ACROSS THIS COUNTRY.**

With the tragedy that struck the Gulf Coast and East Coast, we must now turn our attention to the future and attempt to make certain that at least the flooding does not take place again. We can prevent that; the Dutch, the English and the Italians have done it and so can we if we treat flood control as something that we must do. The citizens of this great nation deserve it.

There are four anomalies of nature that cause death and destruction to our nation. They are (1) earthquakes, (2) hurricanes, (3) tornadoes and (4) floods. The first three we can do very little if anything about except to prepare for the worst. We can build protection against floods, against the "maximum probable flood", one that has an "improbable occurrence but nevertheless a remotely possible one".

In order to provide such protection we believe that three things must be done. First, the environmental laws, or at least the way they are interpreted for flood control projects, must be changed or we stand to lose more lives and have another absolute environmental catastrophe such as the one we have witnessed in New Orleans and along the Gulf Coast. Second, cancel all cost-sharing for flood control projects unless we do intend to only protect those that can afford it and ignore those that cannot. Third, relax the requirements for the benefit to cost ratio for flood control projects for one reason, it is impossible to assign a dollar value to a human life. It is our opinion that these things must be done, for without flood control, nothing else really matters. I close with a simple reminder. The MR&T system is not complete and therefore will not pass the Project Design Flood! Thank you for your leadership and the resulting 100's of billions of dollars averted because you supported and funded the greatest civil works project on the planet ... the MR&T!

I would like to thank each member of the committee, their staff, and the committee staff for taking the time to review the above written testimony. We are appreciative of anything the Energy and Water Development subcommittee can do to improve our livelihoods, and to insure the safety of our communities. Your work is very important to our country and we feel it is important for us to thank you for your service, and for giving us the opportunity to share our testimony.



Dr. Sam M. Hunter, President
The Little River Drainage District
Cape Girardeau, Missouri



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Date: March 25, 2013

To: The Honorable Rodney Frelinghuysen, Chairman
The Honorable Marcy Kaptur, Ranking Member
House Appropriations Subcommittee on Energy and Water Development

From: Jeffrey Kightlinger, General Manager

Subject: Continued Funding for the Colorado River Basin Salinity Control Program
Under the U.S. Bureau of Reclamation's Basin-wide Salinity Control Program

The Metropolitan Water District of Southern California (Metropolitan) encourages the Subcommittee's support for fiscal year 2014 federal funding of \$15.4 million for the U.S. Bureau of Reclamation's Basin-wide Salinity Control Program for the Colorado River Basin.

The concentrations of salts in the Colorado River cause approximately \$376 million in quantified damages in the lower Colorado River Basin states each year and significantly more in unquantified damages. Salinity concentrations of Colorado River water are lower than at the beginning of Program activities by over 100 milligrams per liter (mg/L). Modeling by the U.S. Bureau of Reclamation indicates that the quantifiable damages would rise to more than \$577 million by the year 2030 without continuation of the Colorado River Basin Salinity Control Program (Program).

Water imported via the Colorado River Aqueduct has the highest level of salinity of all of Metropolitan's sources of supply, averaging around 630 mg/L since 1976, which leads to 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 cost of cooling operations, 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 fewer opportunities for recycling due to groundwater quality deterioration; 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 signed Minute No. 242, Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River in 1973, and the President signed into law the Colorado River Basin Salinity Control Act in 1974 (Act). High total dissolved solids in the Colorado River as it enters 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 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, and enter the River through both natural and anthropogenic sources.

The 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 over \$40 million annually on salinity control programs.

The Program, as set forth in the Act, benefits the Upper Colorado River Basin water users through more efficient water management, increased crop production, benefits to local economies through construction contracts and through environmental enhancements. The Program benefits 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.

In recent years, the Bureau of Reclamation Basin-wide Salinity Control Program funding has dropped to below \$8 million. 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 Upper Basin states continue to develop their Compact apportioned waters from the Colorado River and its tributaries.

These federal dollars will be augmented by the state cost sharing of 30 percent with an additional 25 percent provided by the agricultural producers with whom the U.S. Department of Agriculture contracts for implementation of salinity control measures. 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.

Metropolitan urges the Subcommittee to fund the Colorado River Basin Salinity Control Program for fiscal year 2014 in the amount of \$15.4 million for the U.S. Bureau of Reclamation's Basin-wide Salinity Control Program.



Jeffrey Kightlinger

Statement of Rob Rash
Executive Vice President
Mississippi Valley Flood Control Association
March 26, 2013

This is a reminder to the U.S. House of Representatives Appropriations Subcommittee on Energy and Water Development of the Mississippi River and Tributaries (MR&T) system performance in 2011 and 2012. The investment protected by the MR&T system during the 2011 flood was \$234 billion with cumulative damages prevented by the MR&T system being \$612 billion and a return on federal investment of 44 to 1. These prevented damages do not include the return for low water benefits. The hydraulic improvements made by the construction of dikes, cutoffs and channel improvements that allowed a record flood by volume to flow at a lower elevation, are the same improvements that allowed barge traffic to move during the near record lows experienced throughout the Mississippi River in 2012. **Because of these facts we respectfully request an appropriation in the sum of 500 million dollars for the Mississippi River and Tributaries Project.**

First, let me thank the Congress for the support and funding you have provided in the past. This funding proves your awareness of the importance of flood control projects throughout the Mississippi River Valley.

The Mississippi River and Tributaries Project was authorized following a record flood in 1927 that inundated more than 26,000 square miles of the Mississippi River Valley. Over 700,000 people were left homeless and many lives were lost. Most, if not all, East-West commerce was stopped and it adversely affected the economy and the environment of our nation. After that devastating event Congress in its infinite wisdom passed a bill and established the Mississippi River and Tributaries Project and authorized the U. S. Army Corps of Engineers to develop a plan to prevent such a disaster in the future. This project currently is a separate line item in the budget. To remove it will destroy the continuity of this high value and much needed project.

To date the MR&T Project has prevented flood damages and provided other benefits resulting in a current benefit/cost ratio of over \$44 to \$1. Truly this is a wise investment for our nation. Likewise, countless lives have been spared due to the construction of this great project. Also, our nation receives nearly one billion dollars of navigational benefits each year due to this project. It is readily seen this project had merit from the beginning and continues to reward the citizens not only of the valley itself but the citizens of the entire nation. It is a wise investment for this country and it is good for our economy. It will be a vital link to the defense of our nation in the event of an attack by our enemies. This project must be targeted for swift completion and then properly maintained. What an investment for our great nation this project has been! Find any other project of any nature which approaches this ratio.

The performance of the comprehensive Mississippi River and Tributaries system and the Ohio Valley reservoir system during the 2011 flood on the lower Mississippi River validates the wise investment the nation made to prevent another calamitous natural disaster like the 1927 flood,

the devastating event that changed America and forcibly unified its people to support protection of lives and property from the fury of the river. The MR&T system performed as designed, despite rainfall exceeding 600 to 1,000 percent of the normal average rainfall in a two-week period from April 21-May 3 over a significant portion of six states that coincided with the arrival of the upper Mississippi spring snowmelt crest. The significant flood event established many new record discharges and stages along the lower Ohio and Mississippi rivers. Unlike the 2011 flood, the Mississippi River during the benchmark and calamitous Great Flood of 1927 inundated most of the alluvial valley. Like the toppling of a series of dominoes, one overmatched levee after another burst under the unprecedented pressure exerted by the swollen river.

At a time when we need to stimulate our economy, at a time that safety from terrorist activities needs to be enhanced and at a time that many in our nation are concerned about cleaner air, cleaner water, etc., we have a great opportunity to meet those needs. We must make sound investments into our infrastructure which will give back more monies to the taxpayers of this country than was invested while at the same time increasing our defense capabilities should our nation be attacked from an outside force.

Local interests have done their part in providing rights of way, roads, utilities and the like. Our government now needs to fulfill their obligatory part of the project and bring it to completion as quickly as possible.

We believe the Corps could adequately use 500 million dollars each year for maintenance and construction within the MR&T. We realize there are budgetary restraints this year and respectively request Congress to approve adequate funding for maintenance and construction for the MR&T. The MR&T improvements I have talked about thus far have been the benefits for flood control. However, these benefits are also realized during the low flow event currently being experienced on the Mississippi River. The hydraulic improvements that allowed a record flood event to pass at a 0.8 foot lower elevation in 2011 than in 1937, also allow barge traffic and a near record low event experienced in 2012. If it were not for the MR&T system improvements barge traffic during the 2012 low water event would have been nonexistent.

We thank you again for your understanding of our needs and the importance of the MR&T system by not allowing FEMA to charge mandatory flood insurance as defined below:

SEC. 107. MANDATORY COVERAGE AREAS.

- (a) Special Flood Hazard Areas- Not later than 90 days after the date of enactment of this Act, the Director shall issue final regulations establishing a revised definition of areas of special flood hazards for purposes of the National Flood Insurance Program.
- (b) Residual Risk Areas- The regulations required by subsection (a) shall--
- (1) include any area previously identified by the Director as an area having special flood hazards under section 102 of the Flood Disaster Protection Act of 1973 (42 U.S.C. 4012a); and

(2) require the expansion of areas of special flood hazards to include areas of residual risk, including areas that are located behind levees, dams, and other man-made structures.

(c) Mandatory Participation in National Flood Insurance Program-

(1) IN GENERAL- Any area described in subsection (b) shall be subject to the mandatory purchase requirements of sections 102 and 202 of the Flood Disaster Protection Act of 1973 (42 U.S.C. 4012a, 4106).

(2) LIMITATION- The mandatory purchase requirement under paragraph (1) shall have no force or effect until the mapping of all residual risk areas in the United States that the Director determines essential in order to administer the National Flood Insurance Program, as required under section 19, are in the maintenance phase.

Thank you for understanding the tremendous negative impact this piece of legislation would have had on the entire Mississippi River Valley. Billions of dollars already spent on flood control structures would be negated because of needless MANDATORY flood insurance premiums. Please remember the 1928 flood control act recognizes the investment of the local people by initial construction and taxation of themselves for maintenance. This investment was over 200 million dollars in 1928 and totals more than 17 billion dollars today. Making the total investment in the MR&T over 30 billion dollars. Because of this, it is still necessary to discuss the new policies being implemented by the Federal Emergency Management Agency in their Map Modernization Program.

The policy creates a New Zone "X" (shaded) designated area. This new designation shows all areas behind a levee as an unsafe place to live and recommends, among other things, an evacuation plan and flood insurance.

This designation renders all work done by local and federal organizations for the last 100 years, useless. Even if our levees are Federal Levees and have received an outstanding maintenance award through the U.S. Army Corps of Engineers inspection process, this Zone "X" (shaded) designation will be placed on all new flood maps. This will needlessly destroy economic development for over 22,000,000 acres of land in this country. Please put a stop to this new Zone "X" (shaded) designation. Please do not use a "one size fits all" approach and place false fear in the minds of people living behind levees. **THE INSURANCE INDUSTRY WOULD LOVE NOTHING MORE THAN THE ABILITY TO COLLECT FLOOD INSURANCE PREMIUMS WITHOUT THE POSSIBILITY OF PAYING CLAIMS BECAUSE OF THE HARD WORK OF THE U.S. ARMY CORPS OF ENGINEERS AND LOCAL LEVEE AND DRAINAGE DISTRICTS ACROSS THIS COUNTRY.**

With the tragedy that struck the Gulf Coast and East Coast, we must now turn our attention to the future and attempt to make certain that at least the flooding does not take place again. We can prevent that; the Dutch, the English and the Italian have done it and so can we if we treat flood control as something that we must do. The citizens of this great nation deserve it.

There are four anomalies of nature that cause death and destruction to our nation. They are (1) earthquakes, (2) hurricanes, (3) tornadoes and (4) floods. The first three we can do very little if anything about except to prepare for the worst. We can build protection against floods, against

the “maximum probable flood”, one that has an “improbable occurrence but nevertheless a remotely possible one”.

In order to provide such protection we believe that three things must be done.

First, the environmental laws, or at least the way they are interpreted for flood control projects, must be changed or we stand to lose more lives and have another absolute environmental catastrophe such as the one we have witnessed in New Orleans and along the Gulf Coast. Second, cancel all cost-sharing for flood control projects unless we do intend to only protect those that can afford it and ignore those that can not. Third, relax the requirements for the benefit to cost ratio for flood control projects for one reason, it is impossible to assign a dollar value to a human life. It is our opinion that these things must be done, for without flood control, nothing else really matters. I close with a simple reminder. The MR&T system is not complete and therefore will not pass the Project Design Flood! Thank you for your leadership and the resulting 100's of billions of dollars averted because you supported and funded the greatest civil works project on the planet ... the MR&T!

OUTSIDE WITNESS TESTIMONY

Energy and Water Development Subcommittee on Appropriations Honorable Rodney Frelinghuysen, Chairman

Mni Wiconi Project (PL 100-516, as amended), testimony submitted by

Oglala Sioux Rural Water Supply System, Frank Means, Director
Oglala Sioux Rural Water Supply System, Willard Clifford, Acting WMC
Rosebud Sioux Rural Water System, Syed Huq, Director
Lower Brule Sioux Rural Water System, Jim McCauley, Manager

Agency: Bureau of Reclamation

1. FY 2014 Request

The Mni Wiconi Project respectfully requests \$13.0 million in appropriations for operation and maintenance (OMR) activities in FY 2014, including \$1.5 million for the Bureau of Reclamation. This is the first year without a request for construction funding and assumes that the Bureau of Reclamation will make FY 2013 funds available in amounts necessary to fully allocate the remaining, authorized construction ceiling.

OMR funds will be utilized by OSRWSS for regional core and distribution systems on the Pine Ridge Indian Reservation, by the Rosebud Sioux Tribe (RSRWS) on the Rosebud Indian Reservation and by the Lower Brule Sioux Tribe (LBRWS) on the Lower Brule Indian Reservation as summarized in Table 1

TABLE 1

MNI WICONI PROJECT FY 2014 OMR FUNDING NEED

Cost Item	OSRWSS					Total
	Core Distribution		RSRWS	LBRWS	Reclamation	
	19	33	22	12	7.4	
Number of Employees						93.4
Labor and Fringe Benefits	\$1,175,614	\$1,487,990	\$1,135,565	\$734,700	\$651,355	\$5,185,224
Labor Overhead Costs	354,800	484,192	280,825	117,000	418,922	1,655,739
Non-Labor Costs						0
Electricity/Natural Gas/Propane	322,439	391,830	222,884	109,400	304,000	1,350,553
Telephone/Communications	32,137	42,833	21,115	27,600		123,685
Water Treatment Chemicals/Supplies	321,368	87,975	53,560	86,000	11,000	559,903
Wells, Pumps, Motors & Replacement	160,684	109,762	95,400	75,300		441,146
Water Testing	42,849	10,712	2,000	10,000		65,561
Vehicle OMR	120,578	367,425	92,778	119,400	27,000	727,181
Water Service Providers	--	--	242,050			242,050
Travel & Training:	39,635	63,000	17,880	46,600	38,000	205,115
Other	112,919	154,587	112,250	185,000	63,250	628,006
Extraordinary Replacements						
Lagoon (part)	875,000	--	--		--	875,000
Phase I Pump and Motor Controls	--	--	100,000		--	100,000
Phase 1 and II PRV's	--	--	45,000		--	45,000
Pump, Treatment Membranes & Storage Tank				215,000		215,000
Priority Community System Upgrades						0
Valve and Tee Replacements, Pine Ridge	--	299,400	--	--	--	299,400
Valve and Hydrant Replacement, Antelope	--	--	316,759	--	--	316,759
	\$3,558,022	\$3,499,706	\$2,738,066	\$1,726,000	\$1,513,527	\$13,035,321

The OSRWSS Core system serves the three Indian Reservations and the West River/Lyman-Jones Rural Water System (WRLJ) in 9 counties off-reservation in southwestern South Dakota.

Public Law 100-516, as amended, our authorizing legislation, found that:

...the United States has a trust responsibility to ensure that adequate and safe water supplies are available to meet the economic, environmental, water supply, and public health needs of the Pine Ridge Indian Reservation, Rosebud Indian Reservation and Lower Brule Indian Reservation...

and declared the purpose of the Mni Wiconi Project to

...(1) ensure a safe and adequate municipal, rural, and industrial water supply for the residents of the Pine Ridge Indian Reservation, Rosebud Indian Reservation and Lower Brule Indian Reservation in South Dakota;

(2) assist the citizens of Haakon, Jackson, Jones, Lyman, Mellette, Pennington, and Stanley Counties, South Dakota, to develop safe and adequate municipal, rural, and industrial water supplies;

The request as presented in Table 1 will meet the purposes of the Act, and the budgeting by the Administration and the appropriation by Congress of adequate funds will fulfill the fiduciary responsibilities of the United States as articulated in the Act.

Authorized construction funds have been fully expended. Although construction of authorized components of (1) the Oglala Sioux Rural Water Supply System on the Pine Ridge Indian Reservation (OSRWSS) and (2) the Rosebud Sioux Rural Water Supply System on the Rosebud Indian Reservation (Rosebud RWS) has not been fully completed, no request for FY 2014 construction funds is made. Efforts are underway to increase the authorized construction ceiling to complete the projects. Any requests for FY 2014 construction funds will be advanced by the South Dakota Delegation.

The project has been treating and delivering more water each year from the OSRWSS Water Treatment Plant near Fort Pierre as construction has advanced in the 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 98% completion with 100% of the authorized construction funding. The OMR budget must be adequate to keep pace with the system that is placed in operation to protect and preserve the \$470 million investment of the United States in project facilities, which are held in trust by the United States with the exception of the West River/Lyman-Jones facilities.

FY 2014 is the first year that emphasis has shifted to operation, maintenance and replacement as the primary budgeting need. Budgeting and funding by the United States to ensure that aging features of the constructed project are protected is not only sensible

but properly executes the responsibilities of the United States as trustee to the Indian people. While the budgeting by the Administration was adequate this year, budgeting has not been adequate in several of the past years. The concern is that aging components of critical project facilities will not be properly repaired and replaced due to budget limitations.

2. OSRWSS Regional Core Facilities

The attached map shows the Mni Wiconi Project completion status with full use of authorized funding, including the OSRWSS core facilities that serve the three Indian Reservations and the service area of West River/Lyman-Jones (WRLJ).

The staff of the OSRWSS core numbers 19 employees. The staff is a minimum number that are essential to operate and maintain the regional water treatment plant, 203 miles of main transmission pipeline from 12 inches to 27 inches in diameter, nine major pumping stations (4 Megawatt total capacity), nine reservoirs (4.2 million gallons of capacity) and supervisory control and data acquisition (SCADA) system, necessary to serve the OSRWS, RSRWS, LRSRWS and WRLJ service areas. As shown in Table 1, wages and fringe benefits totaled \$1.176 million. Average salaries are \$61,874 annually, including average fringe benefits of \$12,428 annually. Labor overhead totals \$354,800 annually.

Electrical and natural gas utilities have a projected cost of \$322,000 based on historical use and rates projected for 2014 from the service providers. The utilities provide wheeling services for heating, lighting and pumping at the water treatment plant and pumping stations. Electrical costs, except for wheeling services, are covered separately in the budget of the Bureau of Reclamation, which reimburses the Western Area Power Administration directly for power and energy costs.

Chemical costs are comparable in magnitude to the electrical and natural gas utilities at \$321,000 and are needed to treat water and ensure a safe drinking water supply for the three Indian and WR LJ distribution systems served by the OSRWSS core system. Other major costs in the OSRWSS core budget include \$161,000 for pump and motor repair and replacement in the regional water treatment plant and \$121,000 for operation and repair of project vehicles.

The budget includes \$875,000 in extraordinary costs for expansion of the lagoon system at the regional water treatment plant. With experience in operation of the plant since 2005, the need for additional lagoon capacity has become clear. The total cost of the upgrade is \$1,750,000, and half of the funding is needed in FY 2014. The balance will be requested in FY 2015.

The Bureau of Reclamation can confirm that the budget for the OSRWSS core system was developed collaboratively and represents the expected costs of operation and maintenance in FY 2014. The budget is 0.8% more than in FY 2013.

3. OSRWSS Distribution on Pine Ridge Indian Reservation

The staff of the OSRWSS Distribution (Department of Water Management and Conservation, DWMC) numbers 33 employees. The staff is the minimum number that are essential to operate and maintain over 379 miles of main transmission pipeline, 33 major pumping stations, reservoirs and SCADA system. As shown in Table 1, wages and fringe benefits totaled \$1.488 million. Average salaries are \$45,091 annually, including average fringe benefits of \$9,260 annually. Labor overhead totals \$484,192 annually.

Electrical and propane utilities have a projected cost of \$391,830 based on historical use and rates projected for 2014 from the power suppliers. The utilities provide for heating and lighting of the two on-reservation operations offices and 33 pumping stations.

Chemical costs are comparable to FY 2013 amounts at \$89,975 with only slight increases associated with chloramines and the system expansion in FY 2014. These investments are needed to ensure a safe drinking water supply for the 20,000 people living on the Pine Ridge Indian Reservation. Other major costs in the OSRWSS Distribution budget include \$109,762 for pump and motor repair and replacement in the local pump stations and well fields; and \$367,425 for operation and repair of project vehicles which are used in the field to operate and maintain the 379 miles of distribution piping.

The budget includes \$299,400 in costs for installing new valves and tees in the Pine Ridge Community water system. These upgrades are necessary to meet the criteria of the Bureau of Reclamation for transfer of title of the largest community system on the Pine Ridge Indian Reservation to OSRWSS. The total cost of the upgrade is \$600,000 and half of the funding is needed in FY 2014 to match funds with the Indian Health Service and possibly Housing and Urban Development.

The Bureau of Reclamation can confirm that the budget for the OSRWSS Distribution system was developed collaboratively and represents the expected costs of the operation and maintenance in FY 2014. The budget is 13% more than in FY 2013.

The budget narrative of the Bureau of Reclamation in the last budget request included the following:

...The project consists of new systems to be constructed, as well as 40 existing Mni Wiconi community systems. Responsibilities of the Secretary under the Act include the operation and maintenance of existing water systems and appurtenant facilities on the Pine Ridge, Rosebud, and Lower Brule Indian Reservations..

The Bureau of Reclamation is requiring upgrades before "transferring" the 40 existing community systems into the Mni Wiconi Project, and "transfer", according to the Bureau of Reclamation, is a condition of eligibility for operation, maintenance and replacement (OMR) budgeting by the Bureau of Reclamation. The Oglala Sioux Tribe believes that the Mni Wiconi Project does not fulfill the trust responsibility to the Tribe and its membership or the needs of the other residents of the Pine Ridge Indian Reservation without transfer of 20 existing communities to the Project in order to make those

communities eligible for operation, maintenance and replacement funding. Therefore, the OSRWSS request for FY 2014 includes a \$299,400 request that would replace valves in Pine Ridge Village that have been identified by the Bureau of Reclamation as needing replacement before transfer of the community systems to the Project.

The Committee is asked to consider the contradiction that the Bureau of Reclamation has created by its policy, namely that funding (\$10 million) outside the authority of the Mni Wiconi Project Act is required to repair and replace existing facilities in 20 communities on the Pine Ridge Indian Reservation before "transfer" to the Project; but the communities, which have existing systems that are functioning successfully at present, are not eligible for OMR funding until they are "transferred." The communities cannot receive OMR funding, according to the Bureau of Reclamation, until they are "transferred", and OMR funding is needed to conduct the "Cadillac" repairs that Reclamation requires before "transfer."

The modest request of \$299,400 for repairs to valves and related facilities in Pine Ridge Village in FY 2014 will advance the largest community on the Pine Ridge Indian Reservation toward "transfer."

4. Rosebud Sioux Rural Water System (RSRWS)

The staff of the RSRWS or Sicangu Mni Wiconi currently consists of 17 full-time equivalents. Many of these positions are shared with design and construction component of the Sicangu Mni Wiconi and after the completion of the construction phase of the project, the functions shared with the design and construction component will fall fully on the OM&R component. It is anticipated that there will be 22 full-time employees in FY 2014. The staff is the minimum number needed to operate and maintain over 410 miles (over 390 existing and 20 to be constructed in FY 2013) of mainline, 15 (14 existing and 1 to be constructed in FY 2013) major pumping stations, 20 water storage reservoirs, 11 supply wells and associated chlorination facilities, and SCADA system. As shown in Table 1, wages and fringes total \$1.135 million. Average annual salaries are \$51,616, including average fringe benefits of \$15,494. Labor overhead totals \$280,825 annually.

Electrical and propane utilities have a projected cost of \$222,884 based on 1) historical use; 2) an increase in project pumping resulting from more surface water being pumped to Mission and Sicangu Village; and 3) anticipated power rates projected for 2014. The utilities provide for heating, lighting and power for the 15 pump stations and the RSRWS administrative building and shops.

Water treatment chemical costs and general supplies are comparable to FY 2013 amounts and total \$53,560. System maintenance and repair includes routine maintenance and repair activities for pipelines, pump stations, storage tanks, pressure reducing valves and other appurtenances. At a total cost of \$95,400 it is comparable to FY 2013. Water testing is a relatively low cost, at \$2,000 in part because the Tribe does much of the testing themselves. Vehicle operation and maintenance costs total \$92,778 which is only slightly more than the \$90,076 budgeted for FY 2013.

The RSRWS budget includes water service contracts with the city of Mission and the Tripp County Water Users District (TCWUD) at a total cost of \$242,050. In 1995 the citizens of Mission voted to transfer their municipal system to the Mni Wiconi project and in 2003 a final agreement between the Tribe, city of Mission and Bureau of Reclamation was consummated and the former municipal system is now held in trust for the Tribe as part of the RSRWS. The inclusion and OM&R of the Mission system are authorized by Section 3A (a)(8) of the Mni Wiconi Project Act, as amended. The cost of the service contract is \$164,800 which is less than previous amounts because the delivery of surface water will reduce O&M costs associated with the groundwater supply. The second service contract, at \$77,250, is for providing water to tribal members on trust lands in the Secondary Service Area of Tripp and Gregory Counties. Other costs at \$112,250 include computer software license agreements, building and vehicle insurance, SCADA and engineering support.

Like the Oglala Sioux Tribe, the Rosebud Sioux Tribe believes that the authority of the authorizing legislation and trust responsibility of the United States are clear regarding the inclusion of existing systems in the RSRWS. After all, the majority of the service population relies on the existing systems to deliver water to their homes. Rosebud has included \$316,759 for the replacement of valves and fire hydrants in the Antelope community system. The cost estimate is based on the assessment completed by Reclamation in 2010 (adjusted for time using the Reclamation's Construction Cost Trend index) and is only for the highest priority items to ensure functionality of the system. \$145,000 is also requested for pump and motor control replacement on Phase I and pressure reducing valve replacement on Phases I and II. These components will be close to 20 years old and nearing the end of their service life.

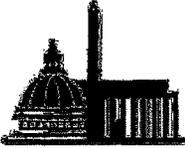
5. Lower Brule Rural Water System

The Lower Brule Rural Water System (LBRWS) is 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. However, booster stations and tanks that were constructed 15-16 years ago are in need of routine maintenance and/or replacement. An increase in the amount of RAX funds provided in the budget is required to fund these functions. With that in mind, the LBRWS request for OM&R for FY 2014 is \$1,726,000 which includes \$10,000 for pump replacement, \$100,000 for treatment plant membrane module replacement, \$80,000 to refurbish the Medicine Butte Ground Storage Reservoir, and \$25,000 in other miscellaneous upgrades. 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.

6. Bureau of Reclamation

The Bureau of Reclamation budget was based on FY 2013 experience, and the Agency should be consulted for its FY 2014 budget, which is not expected to vary significantly. Reclamation provides oversight of operation and maintenance activities for all tribal systems, including the employment of an equivalent 7.4 persons at a cost of \$1.070 million or an average \$145,000 per employee.

The second-most costly budget item of Reclamation after labor costs is the payment of power bills to the Western Area power Administration for demand and energy charges of \$304,000.



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**TESTIMONY OF TIMOTHY R. WARFIELD, EXECUTIVE DIRECTOR, NATIONAL ASSOCIATION FOR STATE COMMUNITY SERVICES PROGRAMS (NASCSP), BEFORE THE HOUSE ENERGY AND WATER DEVELOPMENT APPROPRIATIONS SUBCOMMITTEE IN SUPPORT OF FY 2014 DEPARTMENT OF ENERGY FUNDING
March 29, 2013**

The National Association for State Community Services Programs (NASCSP) urges the U.S. House Committee on Appropriations Subcommittee on Energy and Water Development to fund the Department of Energy's (DOE) Weatherization Assistance Program (WAP) in fiscal year (FY) FY 2014 at no less than \$210 million. NASCSP also supports base, formula appropriations of \$50 million for the State Energy Program (SEP) in FY 2014.

In these austere budgetary times, we understand that difficult decisions have to be made amongst competing priorities. Notwithstanding, the Weatherization Assistance Program is proven, cost-effective, and measurably successful, delivering savings to low-income Americans as well as creating thousands of new jobs. Last year alone, more than 100,000 homes were weatherized and a remarkable one million homes were weatherized between April 2009 and September 2012, far exceeding all goals and expectations. WAP faces an uphill battle in the immediate future due to a sharp reduction in funding post-Recovery Act, leading to the loss of jobs and capacity to assist low-income Americans.

Congress drastically slashed the FY 2012 allocation to WAP to \$68 million – the lowest level since the second year of the program in 1976 — due to many states having temporarily unexpended Recovery Act and program funding. The unique situation of FY 2012 no longer exists, as Recovery Act dollars will be nearly 100% spent out by April 1, 2013 (the start of the 2013 WAP Program Year). Without an increase in funding to at least the level of \$210 million in FY 2014, it is unlikely that the Weatherization Assistance Program will be able to continue operating as a national program. Substantial job losses will occur and the taxpayers' investment in the training of weatherization workers and technical training centers will be lost as workers are idled and training centers closed.

The low-income Weatherization Assistance Program has been highly successful over the more than thirty-six years of its existence, installing energy saving improvements in more than 7.4 million homes. At peak funding, Weatherization

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generated 15,000 new jobs as well as a substantial economic impact through the weatherization supply chain of materials, suppliers and vendors.

Some examples of the Program's accomplishments include:

- Creation and support of more than 15,000 full time, highly skilled jobs within the service delivery network at peak funding levels, with 8,000-10,000 additional jobs from annual grant funding, and many more in related businesses, such as vendors, manufacturers, and materials suppliers; Served over 7.4 million low-income homes since the program's inception, with an additional 38 million homes income-eligible right now for weatherization;
- Saves an estimated 35% of consumption for the typical home, with savings continuing year-after-year and actual dollar savings increasing as fuel prices increase;
- Saves low-income families an average of \$250 to \$450 per year in heating, cooling, and electric costs, depending on their housing type, location, and fuel source;
- Returns \$2.51 for every dollar spent in energy and non-energy benefits over the life of the weatherized home;
- Serves as a foundation for residential energy efficiency retrofit standards, technical skills, and workforce training for the emerging broader market;
- Impacts communities through local purchasing and jobs, supporting over 10,000 local, American businesses nationwide;
- Reduces residential and power plant emissions of carbon dioxide by 2.65 metric tons per year per home; and
- Decreases national energy consumption by the equivalent of 24.1 million barrels of oil annually.

WAP is the largest residential energy conservation program in the nation and serves an essential function by helping low-income families reduce their energy use. The program was developed in the late-1970s as a response to rapidly rising energy costs associated with oil shortages created by oil embargoes. Congress acknowledged that low-income families were particularly vulnerable to increased energy price fluctuations and created the program to assist those families by reducing the cost to heat their homes. WAP was institutionalized within the Department of Energy in 1979 and today operates in all 50 states, the District of Columbia, five U.S. Territories, and several Native American Tribes. Approximately 1,000 local agencies provide services in every political jurisdiction of the country using direct hire crews and local contractors to do the work, thus investing in local businesses and communities. These network providers use program funds to improve the energy efficiency of low-income dwellings, utilizing the most advanced technologies and testing protocols available in the housing industry. Since the

Program's inception, more than 7.4 million homes have been weatherized using federal, State, utility, and other monies.

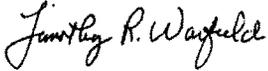
The Weatherization Assistance Program is still as relevant now as it was when it was formed in response to the energy crisis of more than 35 years ago. The savings to America's most vulnerable citizens are significant and make a huge, immediate difference in their lives. These families have an average energy burden – the percentage of their income needed to pay residential energy bills – around 15% of their income as compared to around 3% for non-low-income households, or five times greater. And the poorest families have a much higher energy burden than that. For example, in the state of New Jersey, Committee Chair Rodney Frelinghuysen's home state, there are over 127,000 households below 50% of the federal poverty level, making less than \$12,000 a year for a family of four. Those families have an energy burden of 59.3% - well over half their income. With lower energy bills, these families have more usable income to buy other essentials like food, shelter, clothing, medicine, and health care and thus invest in local businesses and communities. WAP provides a positive return on investment to meet its primary objectives of making homes warmer in winter and cooler in summer and creating safer and healthier indoor environments.

Because of the advanced diagnostics and technology developed in WAP, the program is the foundation for the emerging green energy efficiency retrofit workforce. There are approximately 25,000 jobs in the Weatherization network, with many more supported in related businesses, such as material suppliers. These jobs are good, living wage jobs, which are more important than ever due to the economic downturn in the housing and construction industries. Workers are highly trained and receive on-going instruction to further develop their skills. WAP is at the core of the larger energy efficiency retrofit market, and its training curricula, methods, and centers play an integral role in developing tools and techniques and a workforce. WAP managers, trainers, and technical experts figure prominently in the Recovery through Retrofit initiative, contributing their expertise to the Workforce Guidelines for Residential Energy Efficiency Workers and playing a key role in the development of standardized training curricula, worker certifications, and training facility accreditations.

In order to sustain the program, it is critical that the WAP maintain adequate funding so the network can continue to provide jobs and support local economies as well as promote energy efficiency nationwide. The FY 2013 Continuing Resolution level of \$68 million is not nearly enough to continue nationwide coverage of the program. Continued low funding will result in the loss of jobs, investment of local business, and energy efficiency services that ensure the financial stability, health, and safety of families across the country.

NASCSP urges the Subcommittee to fund the Weatherization Assistance Program at not less than \$210 million for FY 2014. WAP is a clearly proven investment, has provided significant energy savings, and has helped over 7.4 million families live in safer, more comfortable living conditions. This is a program that has proved its worth and effectiveness for over thirty years. NASCSP looks forward to working with Committee members in the future to ensure that this program continues as a sustainable national program to benefit low-income Americans. NASCSP also supports base, formula appropriations of \$50 million in FY 2014 for the State Energy Program.

Respectfully submitted,

A handwritten signature in cursive script that reads "Timothy R. Warfield".

Timothy R. Warfield, Executive Director
National Association for State Community Services Programs

TESTIMONY OF DAVID TERRY, EXECUTIVE DIRECTOR, THE NATIONAL ASSOCIATION OF STATE ENERGY OFFICIALS, BEFORE THE HOUSE ENERGY AND WATER DEVELOPMENT APPROPRIATIONS SUBCOMMITTEE IN SUPPORT OF FY'14 DEPARTMENT OF ENERGY FUNDING

March 29, 2013

Chairman Frelinghuysen and members of the Subcommittee, I am David Terry, Executive Director 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 \$50 million for the base, formula State Energy Program (SEP). SEP is the most successful program supported by Congress and DOE in this area. This should be base program funding, with no competitive portion, which focuses primarily on DOE's internal priorities. SEP is focused on working with private business to help facilitate 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. The base SEP funds are the critical linchpin to help states in building on these activities and expanding energy-related economic development, much as SEP has done for 30 years. We also support the \$210 million level for the Weatherization Assistance Program (WAP). These programs are successful and have a strong record of delivering savings to low-income Americans, homeowners, businesses, and industry. We also support the funding level provided in the FY'13 Budget Request for the Energy Information Administration (EIA) of \$116.4 million. EIA's state-by-state data is very helpful and has been improving. EIA funding is a critical piece of energy emergency preparedness and response, and there are significant EIA responsibilities under EISA. NASEO continues to support funding for a variety of critical buildings programs, including Building Codes Training and Assistance, Energy Star, and residential energy efficiency at least at the FY'12 level, and Building Codes at a \$15 million funding level. NASEO also supports funding for the Office of Electricity Delivery and Energy Reliability ("OE") at the level of the FY'13 Budget Request. 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. This office was very helpful in Super Storm Sandy response. We also strongly support the R&D function and Operations and Analysis function within OE. The industries program (now renamed the Advanced Manufacturing program) should be funded to promote efficiency efforts and to maintain US manufacturing jobs, though we are concerned that both "new" industries and traditional manufacturing should be supported. We are also interested in working with this Subcommittee, Congress and the Administration on the proposed "Race to the Top" initiative. We look forward to reviewing the details, when available. However, the proposed "Race to the Top" should not supplant SEP funding.

Formula SEP funding provides a basis for states to share best practices among themselves. These best practices (even without stimulus funds) allow states to get a great deal accomplished. These types of activities include energy financing programs, revolving loans, utility-based programs, energy service performance contracts, etc.

In January 2003 (and updated in 2005), Oak Ridge National Laboratory (ORNL) completed a study and concluded, "The impressive savings and emissions reductions numbers, ratios of savings to funding, and payback periods . . . indicate that the State Energy Program is

operating effectively and is having a substantial positive impact on the nation's energy situation." ORNL found that \$1 in SEP funding yields: 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. Energy price volatility makes the program more essential as businesses and states work together to maintain our competitive edge.

Stimulus Funding Implementation

We have been working closely with DOE to close-out the ARRA programs as quickly as possible, after successfully implementation. NASEO is sharing best practices and providing information to officials at all levels of government in order to more effectively coordinate this effort. We are convinced that these funds helped assist the private sector to implement major positive changes in the U.S. economy that will improve all sectors of the economy. NASEO believes it is important to maintain base levels of appropriations for critical programs, such as SEP and Weatherization, in order to avoid a huge decrease in funding after a rapid stimulus increase.

Examples of Successful State Energy Program Activities: The states have implemented thousands of projects. We have previously supplied to Subcommittee staff examples of programs and projects implemented. Here are a few representative examples.

Arizona: SEP funds are supporting energy efficiency improvements in 33 school districts statewide. The School Energy Efficiency Program, administered in conjunction with the Arizona School Facility Board, provides grants covering up to 30 percent of a project's cost with the school district responsible for the remaining 70 percent either through an energy performance contract or using bond funds. SEP funds are also being utilized to support the Small School District Solar Program. To date, the program has awarded grants to 57 small school districts for the installation of photovoltaic systems.

California: This state is improving energy efficiency in state-owned buildings through the State Property Revolving Loan Fund Program. This sustainable loan program is supporting energy upgrades in more than 60 buildings located throughout the state -- including energy retrofit projects in 18 California Highway Patrol Offices. California's Clean Energy Business Financing Program (CEBFP) provides low-interest loans to clean energy manufacturing companies and is supported by SEP funds and the California Energy Commission. Included among a number of the loan recipients was the Fremont-based Solaria Corporation. They installed new equipment in 2011 and created over 75 full-time jobs, in addition to an estimated annual production of solar panels that in turn generate approximately 11.3 megawatt-hours of clean electricity and reduce CO2 by nearly 4,000 tons per year.

Idaho: With SEP funding and the success of a K-12 pilot, the Idaho Office of Energy Resources (OER) moved forward with the K-12 Energy Efficiency project. This project began with energy audits on 894, K-12 school buildings throughout Idaho; continued with HVAC and control system tune-ups on 836 of the buildings resulting in an estimated yearly energy savings of up to \$3.9 million dollars; and Energy Expert Software was installed in 91 schools, with 15 of those schools receiving educational kiosks for energy efficiency education.

Indiana: One program funded under the SEP program in Indiana is the Conserving Hoosier Industrial Power (CHIP) Grant, which provides grants to fund energy efficiency upgrades in

commercial and industrial facilities throughout the state. Since 2010, 25 companies have been awarded SEP funds under this program to become more energy efficient. Projects include the implementation of energy-saving measures such as new lighting, variable frequency drives, boiler and HVAC upgrades, and energy management systems.

Kansas: They have implemented an extensive energy savings performance contracting program that has provided energy efficiency upgrades to over 76% of state buildings.

Kentucky: The Kentucky Department of Energy Development and Independence (DEDI) helps teams of designers, architects, and school administrators develop and construct, cost-effective zero-net energy capable schools. The energy use reductions and cost savings have been dramatic. The training and assistance efforts, accomplished through SEP funding, played a pivotal role in helping Kentucky pursue and achieve its market transformation goals, while simultaneously encouraging other states (e.g., VA, MD, NC) to identify similar opportunities.

Louisiana: In Louisiana, SEP funding helps support the popular Home Energy Rebate Option Program (HERO). The program offers a cash rebate for energy retrofits, as well as providing training, and quality control for the energy raters who certify efficiency projects. During the past two years, more than 1,100 existing homes were retrofitted, resulting in a 30 percent average increase in energy efficiency per home and nearly 47,000 MMBtu in total annual energy savings in all homes completed.

Mississippi: In Mississippi, an SEP grant program provides incentives to public and private entities to help deploy commercially available renewable energy technologies in 17 projects across the state. Twelve of the 17 projects involve photovoltaics (PV). Eight PV projects, representing 359.9 kW of renewable generation, have been completed, and four others are underway. One of the ongoing projects is at Twin Creeks Technologies' manufacturing facility in Senatobia, allowing the company to install a 60kW rooftop solar array at its photovoltaic production facility. This project, along with all others benefiting from the grant program, were completed in 2012. Their public buildings program is helping to finance energy-saving upgrades through performance contracting in 10 public institutions. The participating public sector partners include the Biloxi School District, Cleveland School District, Desoto County, Jefferson County, Lawrence County School District, Mississippi State Hospital, Monroe County School District, Claiborne County, Alcorn County School District and Hollandale School District. Under the program, 149 public buildings, representing more than 3 million square feet of space, have been completed.

Nebraska: Administered by the Nebraska Energy Office (NEO), the Dollar and Energy Saving Loan Program is a revolving loan fund that reduces the interest rate for energy-related projects meeting minimum efficiency standards. Active since 1990, it is one of the longest standing and highest volume energy efficiency loan programs in the country. Its current total loan pool is approximately \$37 million and as of June 2012, the program has financed 27,553 projects, a majority of which were in the residential market. Currently, more than 265 lenders, operating in over 900 locations across the state, are eligible to offer Dollar and Energy Saving loans. Over 22 years, the program's extraordinarily low default rate cost the state just \$106,000 on over \$241 million in loans.

New Jersey: Among the programs funded in New Jersey through SEP, are a Combined Heat and Power (CHP) grant, a grant for energy projects in public buildings, a residential energy efficiency retrofit program, and a financing program for residential solar. The Energy Efficiency through Clean CHP program provides grants for CHP production at existing facilities of large

commercial and industrial customers. All totaled, nearly 35 MW of clean energy production has resulted from this SEP-funded grant program.

New York: Over the past three years, the New York State Energy and Research Development Authority (NYSERDA) has supported the development and installation of nearly 250 clean energy projects, using a mix of funding, including SEP. These projects are helping public and non-profit entities reduce energy costs by an estimated \$22 million annually. Among the projects are 152 energy efficiency grants that have resulted in building energy retrofits in 193 buildings. In addition 2,340 streetlights were replaced with energy-efficient streetlights utilizing grant funding. Another 85 grants were awarded under the renewable energy grant program for photovoltaic projects. NYSERDA is also operating a number of utility, on-bill recovery financing programs and they are working to establish a \$1 billion "Green Bank."

Ohio: Ohio's Energy Efficiency Program for Manufacturers (EPEM) is a multi-phase energy efficiency program using SEP funding that provides facilitation services and financial assistance to Ohio manufacturers to evaluate, plan, and implement cost-effective energy improvements at their facilities. The program was developed to provide Ohio's manufacturers with a tool to reduce costs through implementation of energy measures identified in the diagnostic process.

Pennsylvania: In Pennsylvania, the Green Energy Works' solar grants, funded in part by SEP, are supporting seven solar projects, totaling nearly 6 MW. Among the projects completed in 2011 was a 1.5 MW photovoltaic system on a parking garage at Merck's Upper Gwynedd Campus in North Wales. The project is providing 14 percent of the electricity for Merck's marketing headquarters and will help the company meet its goal of reducing greenhouse gas emissions by 10 percent by 2015.

Tennessee: Using SEP funding, the Tennessee Solar Institute (TSI) is a center of excellence partnering the University of Tennessee (UT) and Oak Ridge National Laboratory, focusing on industry partnerships to improve the affordability and efficiency of solar products. TSI also serves as a crossroads for a wide-range of solar-related activities, including the Solar Installation and Innovation Grant programs. A total of 236 grants have been awarded to date and over \$40 million dollars of private funds have been leveraged. The grant programs have added approximately 6.5 MW of solar power to the grid.

Texas: The Texas State Energy Conservation Office (SECO) operates the nation's largest and longest running revolving energy loan fund--the Texas LoanSTAR (loans to Save Taxes And Resources) Program. The Texas Energy Office initiated the program in 1988 and since its inception, more than 200 loans, totaling nearly \$300 million, have achieved total cumulative energy savings of almost \$300 million. The average payback for a LoanSTAR loan is approximately six years. SECO also launched another loan program in 2009 using SEP funds, the Building Efficiency Retrofit Program. Like LoanSTAR, the Retrofit Program provides loans for energy efficiency and retrofit activities on government-owned buildings and facilities.

National Hydropower Association – Jeffrey Leahey, Director of Government Affairs
Phone 202.682-1700, ext.15; email: Jeff@hydro.org
House Appropriations Energy and Water Subcommittee
Department of Energy (Water Power Program) FY 2014 Appropriations

The National Hydropower Association¹ submits this statement in support of \$59 million for the U.S. Department of Energy's (DOE) FY 2014 Water Power Program and its research and development (R&D) initiatives. The program provides critical R&D support to ensure that innovative new technologies and operational advancements arrive at market, increasing America's clean energy portfolio and providing economic and jobs benefits the country needs.

As we work to improve and facilitate new project development on the nation's existing waterway infrastructure, we also strongly advocate directing resources to the U.S. Army Corps of Engineers (USACE) and Bureau of Reclamation.²

Requesting \$59 million in FY 2014 funding for the DOE Water Power Program

In recognition of scarce federal resources, we propose a FY 2014 funding request for the DOE Water Power program that represents **no increase** over the current congressionally adopted funding level of \$59 million. Funds should be directed across all hydropower technology sectors including – conventional hydropower, pumped storage, marine and hydrokinetic (MHK), and conduit technologies.

Advocating for federal R&D Support

Hydropower offers tremendous promise as a way to address some of our most pressing energy challenges while creating a multitude of economic and jobs opportunities in localities across the country. By maintaining stable funding for the Water Power program's R&D initiatives, we bring the country closer to expanding a home-grown and clean resource. Continued research into how to increase the cost effectiveness of this resource will quicken the pace to commercialize and make use of new water power generation advancements.

Furthermore, continued funding of basic and applied research and development for clean energy technologies balanced with work on commercialization, market transformation and other efforts ensures that products, services, and data assessments are transferred to the private sector.

In addition, NHA's request for continued federal support for hydropower R&D is in line with the Administration's pledge to spur investment in renewable energy projects that also create well-paying domestic jobs. This aligns with the president's own goal to explore "targeted and smart investments to help catalyze renewable energy technologies" that can lead to more U.S. manufacturing.

¹ NHA, with over 180 members, is the national trade association dedicated to promoting the nation's largest renewable electricity resource and advancing the interests of the hydropower, pumped storage, and new ocean, tidal, conduit and in-stream hydrokinetics industries.

² For example, DOE has identified 12 GW of new capacity at existing non-powered dams. Of the top 100 sites, for which there is 8 GW of potential, 81 are on USACE dams.

The Department of Energy Water Power Program

The DOE Water Power Program is growing the nation's global position by funding cutting-edge research to produce the next generation of hydropower, pumped storage and marine and hydrokinetic (MHK) technologies, and by accelerating the development of markets for those technologies. Over the years, the program has been the smallest of the DOE R&D programs, yet as described below, will play a central role in the future as the country looks to bring more new renewable energy online and integrate increasing amounts of intermittent energy resources.

Increasing hydropower generation provides more clean energy megawatts to the grid, and also increases the amount of grid reliability, stability and integration services needed to support the penetration of resources like wind and solar. Hydropower and pumped storage projects can provide utility and grid-scale energy storage, and other ancillary services, but doing so will require projects to operate in new ways and modes, and in some cases, utilize new technologies.

This makes continued federal research investments vitally important.

Further, the hydropower industry employs more than 300,000 workers in the U.S., making it the largest renewable electricity production workforce in the nation. With the DOE's goal for waterpower technologies to provide 15% of the nation's energy by 2030, hydropower can provide hundreds of thousands of new jobs and economic development benefits.³

Priority Hydropower R&D Needs

In support of the country's energy independence and clean energy goals, NHA has identified industry R&D priority topics that will enhance the industry's ability to grow and develop new projects, technologies, and operational modes, to maintain and enhance generation at existing projects as well as support new project deployment.

Market analysis on the value of ancillary services

In addition to being our nation's largest renewable energy generator, hydropower provides ancillary services to the power grid such as frequency regulation, spinning reserves, voltage control, and load following, among others.

However, current market structures undervalue – and largely take for granted – the ancillary services provided by hydropower, which serves as a disincentive for further development. Improving methods to estimate the benefits of the ancillary services provided by conventional and pumped storage generation would not only refine the valuation of hydropower-generated energy, potentially leading to additional project development, it would also increase grid stability.

³ DOE, Office of Energy Efficiency and Renewable Energy, "Water Power for a Clean Energy Future," at P.2. http://www.eere.energy.gov/water/pdfs/wp_accomplishments_brochure.pdf

Initiatives could include: research market structures that would provide appropriate incentives to build new assets providing ancillary services; and improve methods to estimate and value benefits of ancillary services.

Conventional Hydropower and Pumped Storage Generator R&D

Due to the significant addition of intermittent generation resources such as wind and solar to the grid, hydropower and pumped storage assets are operated with more starts and stops that increase operation and maintenance costs. Generators with faster cycling times, variable speeds, and improved efficiencies would benefit the grid, increase generation, allow for increased penetration of intermittent sources, and lower the costs for operation and maintenance.

This is particularly needed for the pumped storage sector, which is our nation's largest form of grid energy storage accounting for 99% of storage capacity in the U.S. and worldwide. Due to its importance in maintaining a stable power grid, further investigation of industry needs would help to facilitate expansion of existing hydropower pumped storage and the deployment of new facilities.

Technological advancements in generators, the diversification of plant configuration options, improvement of pump-back efficiencies, and investigation of multi-phase systems all provide the potential for increased generation and grid stabilization, while reducing the price of power.

Advanced Turbines

Advanced turbines have potential to add significant generation capacity by addressing environmental mitigation issues that are often barriers to adding new capacity to existing projects as well as developing new projects. Deployment, testing and monitoring of these advanced turbines is required to prove the environmental effectiveness, operational performance, and document operational and maintenance costs.

One of the major challenges facing the hydropower industry is in providing effective downstream fish passage, particularly at sites with threatened or endangered species. Advanced turbines are intended to reduce the fish mortality associated with turbine entrainment. In addition, market analysis of new potential installation locations, and comprehensive evaluations of potential uses and locations for advanced turbines will facilitate long-term deployment. Multiple site installations will be required to verify advanced turbines as its effectiveness is site dependent.

In addition, small hydropower resources in the U.S. are underutilized due the capital expense in development, environmental mitigation, and licensing. Advances in small turbine designs to reduce the cost of installation and/or environmental mitigation would lead to an increase in hydropower generation.

Further research into the recent experiences of small hydropower developers as well as reviewing the new low-head turbine applications would create efficiencies for potential project developers. Similar to large hydropower sites (which have been the primary focus of current

turbine research), a primary challenge for smaller installations is fish passage and entrainment mitigation. As such, research into the available turbine and other mitigation technologies that minimize injury, mortality, as well as address water quality issues, while maximizing power generation, would facilitate small project deployment.

Additional R&D Initiatives

Beyond the specifics mentioned above, the hydropower industry has identified other R&D topics including:

- hydropower generation system integration (operational forecasting of renewable energy; benefits of aggregating small distributed hydro assets);
- computational fluid dynamic (CFD) modeling (improvements in flow modeling; turbine analysis; water quality modeling and mixed phase modeling);
- flow measurement (research improved flow measurement methods and lower costs and maintenance of continuous flow measurement techniques);
- hydro resources and assets database development (clearinghouse of all available information, studies, results and compilations including growth potential, mitigation effectiveness, best practices, etc.)

Support for increased hydropower development at federal facilities

In this request, NHA also urges the Committee to direct support to the Army Corps of Engineers Civil Works and the Bureau of Reclamation efforts to operate, maintain, and upgrade their existing hydropower projects as well as to build on their existing non-powered infrastructure.

Recent federal studies show that thousands of megawatts of new hydropower capacity exist at non-powered dams owned or operated by the Army Corps of Engineers as well as significant growth potential at existing Bureau canals and conduits.

NHA, along with members of the NGO community, have formed a coalition to address issues with non-federal hydropower development at these federal sites. Without action to redress current challenges as experienced by developers wrought with costly and unnecessary delays, the country will not realize the significant energy potential these untapped sites offer.

Conclusion

Unlocking the vast hydropower potential of our rivers, oceans, tides and conduits requires funding the R&D and other initiatives that make innovative ideas a reality. The DOE Water Power Program is an important source of support for the researchers, scientists, and project developers and owners working to grow to our country's clean energy resources.

We urge Congress to maintain current \$59 million funding level for the DOE program and to provide funding support to the Corps of Engineers and the Bureau of Reclamation. This investment will increase not only the amount of clean, renewable hydropower generation, but also the grid services needed to expand the use of intermittent, variable energy resources as well.

National Water Resources Association
House Appropriations Subcommittee on Energy and Water Development and Related Agencies
U.S. Bureau of Reclamation and U.S. Army Corps of Engineers

On behalf of the membership of the National Water Resources Association, I am writing to express our concern over the incremental reduction in funding for the U.S. Bureau of Reclamation's projects and programs over the past several years.

As you are aware, the Bureau operates 180 projects in 17 western states at an investment of over \$12 billion. These projects provide water to over one-third of the West's population and irrigate approximately 10 million acres of land. In addition, the Bureau's 53 power plants generate 40 billion kilowatts of electricity. The Reclamation Program represents arguably the most successful public-private partnership in our nation's history. The infrastructure build pursuant to the Reclamation Act of 1902 and subsequent amending legislation was responsible for settlement of much of the western United States. That infrastructure is still vitally important to the economic viability of western lands.

It is difficult to make recommendations to the Committee without seeing what the Administration is proposing for FY-2014. However, as previously stated, the last several years has seen an alarming incremental reduction in the Bureau's budget. Last year, the Administration's budget request for the Bureau was made to look better by including projects and programs which were previously off budget, i.e. funding for work authorized by the Central Utah Project Completion Act and funding for various Indian water rights settlements. In reality, the Bureau experienced a significant decrease in project and program funding in the FY-2013 budget request.

In order to maintain the operational integrity of the Bureau water and power infrastructure at peak efficiency, we recommend an increase in overall funding for FY-2014 in the range of between 10 to 12 percent.

With respect to FY-2014 funding of the U.S. Army Corps of Engineers Civil Works Program, we support the Committee's recommended level with consideration given to inclusion of the Central City, Trinity River Vision Project in Fort Worth, TX.

With respect to specific projects and programs, we would call the attention of the Committee to the following high priority line items:

U.S. Bureau of Reclamation

Colorado River Basin Salinity Control

FY-2014 Request: \$15.4 Million DOI, \$1.4 Billion (EQIP finding) USDA

Waters of the Colorado River are used by approximately 40 million people and used to irrigate approximately 4 million acres in the United States. Higher salinity water creates environmental and economic damages. Present quantifiable damages are estimated by Reclamation to be several hundred million dollars with projections that they would climb to more than \$500 million annually by 2030 without continued aggressive implementation of the Program.

Congress has authorized implementation of the Colorado River Basin Salinity Control Program through the Colorado River Basin Salinity Control Act (P.L. 93-320) as amended. Implementation is accomplished through Department of the Interior and Department of Agriculture programs. In recognition of US water quality commitments to Mexico and the fact that the majority of the salt load of the Colorado River comes from federally administered lands, the Act directs that 70 percent of the Program is funded via appropriations with the remaining 30 percent basin states cost-share coming from the Basin Funds. The Program's Plan of Implementation identified in the 2011 Review, Water Quality Standards for Salinity, Colorado River System, as adopted by the basin states and EPA calls for approximately 650,000 tons of additional annual salinity control by 2030. The FY-2014 funding level requirements are: \$15.4 million in Reclamation's Basinwide Program, \$1.5 million for salinity specific projects in BLM's Soil Water and Air Program, and \$17.3 million under USDA's (NRCS) Environmental Quality Incentives Program (EQIP), total EQIP funding being \$1.4 Billion. The DOI funding levels are specific in line-item programs whereas USDA's EQIP is funded under the Farm Bill.

Garrison Diversion Unit

FY-2014 Request \$30.4 Million DOI (Bureau of Reclamation)

The Association strongly supports the request of the Garrison Diversion Conservancy District, the State of North Dakota and the North Dakota Congressional delegation of \$30.4 million for ongoing construction of the Garrison Diversion Unit. The project provides Indian and non-Indian rural and municipal water supply, as well as fish and wildlife mitigation and enhancement and operation and maintenance of existing facilities. The project is compensation to North Dakota for construction of dams on the Missouri River.

Lewis & Clark Regional Water System

FY-2014 Request \$35 Million DOI (Bureau of Reclamation)

Congress authorized the Lewis & Clark Regional Water System in 2000. The three states and 20 local members have pre-paid 100 percent of the non-federal cost share, a combined \$154 million, demonstrating the strong local and state commitment to the project. Unfortunately, federal funding the last few years has not even been enough to cover inflation, let alone allow the project to make any significant construction progress. Not including FY13 funding, which has not yet been finalized, the federal government has paid \$207.5 million toward Lewis & Clark as of November 2012. According to the Bureau of Reclamation, the remaining federal cost share, which is indexed each year for inflation, was \$200.6 million in 2012. By comparison, the remaining federal cost share in 2011 was \$194.3 million and in 2010 was \$188.6 million. This demonstrates that under recent funding levels the project will never be completed. Even at \$10 million a year Lewis & Clark's engineers estimate it would take until 2050 to complete the project. The longer it takes to complete Lewis & Clark the more expensive it becomes and the longer it takes to realize the full economic benefits of having access to the critically needed water, which is a terrible disservice to the taxpayers.

Lewis & Clark is currently 65 percent complete and began serving water last July to eleven of the 20 members. With the remaining construction schedule entirely dependent upon federal funding, there is unfortunately no timeline when the remaining nine members will receive water. The federal government needs to honor its commitment to the project and not leave these cities and rural water systems high and dry.

Mni Wiconi Water Supply Project

FY-2014 Request \$13 Million DOI (Bureau of Reclamation)

The Mni Wiconi Project is requesting \$13.0 million in appropriations for operation, maintenance and replacement (OMR) activities in FY 2014. This is the first year without a request for construction funding and assumes that the Bureau of Reclamation will make FY 2013 funds available in amounts necessary to fully allocate the remaining, authorized construction ceiling. OMR funds will be utilized for regional core and distribution systems on the Pine Ridge, Rosebud and Lower Brule Indian Reservations. The OMR budget must be adequate to keep pace with the system that is placed in operation to protect and preserve the \$470 million investment of the United States in project facilities, which are held in trust by the United States with the exception of the West River/Lyman-Jones (non tribal) facilities. FY 2014 is the first year that emphasis has shifted to OMR as the primary budgeting need. Budgeting and funding by the United States to ensure that aging features of the constructed project are protected is not only sensible but properly executes the responsibilities of the United States as trustee to the Indian people. While the budgeting by the Administration was adequate this year, budgeting has not been adequate in several of the past years. The concern is that aging components of critical project facilities will not be properly repaired and replaced due to budget limitations.

Yakima River Basin Enhancement Project Phase II – Yakima Basin Integrated Plan

FY-2014 Request \$45 Million DOI (Bureau of Reclamation)

Authorized under Title XII of PL 103-434 the Yakima River Basin Integrated Water Resource Management Plan brings together a diverse group of farmers and ranchers, irrigation districts, county and city governments, the Yakama Nation, conservation organizations environmental groups and state and federal agencies. The Integrated Plan will create jobs, enhance competitiveness of basin farmers and strengthen the economy while rebuilding salmon runs, increase recreational opportunities and protect critical resources.

Sunnyside Conservation Program

FY-2014 Request \$3.5 Million DOI (Bureau of Reclamation)

Authorized under Title XII of PL 102-434 the Sunnyside Conservation Program is a seven state watershed management and erosion protection program accomplished through conservation and on-farm resources management and is ongoing work done under the Yakima River Water Enhancement Project Act.

Endangered Species Recovery Implementation Program

FY-2014 Request Support President's Budget Request

This program provides funding for Upper Colorado and San Juan endangered fish recovery programs that ensure ESA compliance for 2,500 federal, tribal, and non federal water projects under federal/non-federal cost sharing arrangements authorized by Congress under PL 106-392.

Fisheries and Aquatic Resources Conservation Activity**National Fish Hatchery Operations Subactivity**

FY-2014 Request Support President's Budget Request

This program provides the federal share of funding from USFWS for the Upper Colorado and San Juan Endangered Fish Recovery Program and ensures ESA compliance for 2,500 water projects.

Resources Management Appropriation Ecological Services Activity**Endangered Species Subactivity – Recovery of Species Element**

FY-2014 Request Support President’s Budget Request

This program provides the federal share of funding from USFWS for the Upper Colorado and San Juan Endangered Fish Recovery Program and ensures ESA compliance for 2,500 water projects.

Title XVI Program

FY-2014 Request \$29 Million DOI (Bureau of Reclamation)

Title XVI is a major component of Reclamation’s WaterSMART strategy. It provides authority for project sponsors to receive federal funding on a cost-shared (75 percent non-federal – 25 percent federal) basis for planning, design, construction and pre-construction activities.

California Bay-Delta Restoration

FY-2014 Request \$39 Million DOI (Bureau of Reclamation)

The California Bay-Delta is the hub of the nation’s largest water delivery system and one of the most important estuary ecosystems in the United States. The Bay-Delta provides drinking water for 25 million people and support agricultural activity which produces 45 percent of the nation’s fruits and vegetables.

Arkansas Valley Conduit

FY-2014 Request \$15 million DOI (Bureau of Reclamation)

Authorized by PL 87-590 and supplemented under PL 111-11, the purpose of the Arkansas Valley Conduit (AVC) project is to deliver water for municipal and industrial water uses within Southeastern Colorado Water Conservancy District’s boundaries. This water supply is needed to supplement or replace existing poor quality water and to help meet the AVC water providers’ projected water demands through 2070.

Central City, Trinity River Vision Project, Fort Worth, TX

FY-2014 Request \$41.7 Million (U. S. Army Corps of Engineers)

Flood Control, Ecosystem Enhancement and Environmental Remediation authorized by PL 108-447.

NEW PROJECT/PROGRAM STARTS**Cooperative Environmental Water Transactions Program Development**

(EBID 0203-12-036170

FY-2014 Request \$70,000 DOI (Fish and Wildlife Service)

Water Conservation Field Service Program (Irrigation Management System)

Grant 11056012 CFDA # 15.530 Funding No. R12SF40020

FY-2014 Request \$80,000 DOI (Bureau of Reclamation)

We appreciate the opportunity to present our funding priorities for rural FY-2014 to the Committee and stand prepared to assist the Committee in any manner necessary.

Thomas F. Donnelly, Executive Vice President (703) 524-1544

**Outside Witness Testimony Submitted by the
Nuclear Engineering Department Heads Organization (NEDHO)**

**House Appropriations Subcommittee on Energy and Water Development
On the FY 2014 Energy and Water Development Budget Request**

March 29, 2013

Chairman Frelinghuysen, Ranking Member Kaptur and members of the Subcommittee:

On behalf of the faculty and students comprising the nuclear engineering education system in the U.S., we wish to provide testimony on the FY 2014 appropriations for the U.S. Department of Energy (DOE) and other relevant agencies under the Subcommittee's jurisdiction.

As you begin to develop FY 2014 appropriations legislation, we strongly urge you to consider our following requests:

- 1. Provide funding for DOE Office of Nuclear Energy (DOE-NE) research and development (R&D) programs at the FY2012 enacted levels.**
- 2. Full funding for the Integrated University Program (IUP), with appropriations to the DOE-NE, DOE National Nuclear Security Administration (DOE-NNSA) and the U.S. Nuclear Regulatory Commission (NRC) to provide scholarships, fellowships, junior faculty awards, and other mechanisms to attract the best and brightest students and faculty into the field.**
- 3. Continued support for the Nuclear Energy University Program (NEUP) which dedicates up to 20% of DOE-NE research and development (R&D) spending for work performed led by universities in partnership with national labs and industry.**
- 4. Funding for the Nuclear Uniform Curriculum Program at community colleges and funds to improve craft training and apprentice programs with labor.**

The Nuclear Engineering Department Heads Organization (NEDHO) is an alliance of nuclear and radiological science, engineering and technology academic programs across the United States. NEDHO provides a forum for discussion, coordination, and collaboration on issues such as academic accreditation, funding for scholarships, fellowships, and research, and funding for training and research reactors, all supporting the overarching goal of providing the necessary human talent for the safe, secure, safeguarded use of nuclear technology. NEDHO collaborates with the American Nuclear Society (ANS), the Nuclear Energy Institute (NEI), the Test, Research, and Training Reactors (TRTR) organization, ABET, the National Academy for Nuclear Training/Institute of Nuclear Power Operations (INPO), and other similar societies and organizations that have a stake in nuclear education. We also have strong interactions with the industry and government, both of which hire our students and utilize our research results. At present, NEDHO's membership includes 44 US academic institutions in 29 states, including 2 military academies.

NEDHO seeks to inform national decision makers on nuclear policy, science and technology, and related educational programs through Hill visits and by providing testimony at various Committee hearings such as this one. NEDHO's ultimate goal is to preserve our nation's historic leadership in the nuclear field, and to sharpen our competitive edge in the future by maintaining

a tradition of excellence in nuclear academia that is the envy of the world. For decades we have sustained the nuclear enterprise with highly qualified human resources that led to the development of nuclear power as a viable, safe, and environmentally sound source of electricity. Our graduates have also contributed to advances in nuclear medicine and a multitude of industrial applications (such as oil-well logging), and have engaged in activities in nuclear security and safeguards.

Without the types of Federal programs previously noted, the nuclear academic community would not have been in position to meet the increased demand for new nuclear workers and advances in nuclear science and technology which have been on the rise in the U.S. driven by three primary factors: U.S. economic and energy security, global competitiveness, and national nuclear security.

First, with regards to U.S. economic and energy security, we note that nuclear energy today accounts for about 20% of the U.S. total electricity supply and two-thirds of non-carbon-emitting electricity sources. The U.S. nuclear power industry, under a rigorous regulatory regime administered by the NRC, has established itself as a safe, environmentally responsible, economic, and highly reliable 24/7 base load provider of electric energy with about 90% capacity factors. Available forecasts for uranium ore indicate ample, reliable, and inexpensive supplies and suppliers for the foreseeable future. Four new AP 1000 reactors are currently under construction at the Vogtle site in Georgia and the VC Summer site in South Carolina. The completion of the Tennessee Valley Authority Watts Bar Unit 2 was approved in 2007 and construction has resumed. There is also rising interest in Small Modular Reactors (SMR). The DOE has solicited proposals for cost-shared SMRs that have the potential to be licensed by the NRC and achieve commercial operation around 2025, while offering innovative and effective solutions for enhanced safety, operations and performance. The funding for this solicitation will be derived from the total \$452 million identified for the DOE's SMR Licensing Technical Support Program. Public perception of the safety of America's nuclear fleet will be sustained by the improved features in new designs and by incorporating lessons learned from Fukushima. In addition, the recommendations of the Blue Ribbon Commission regarding the back-end of the nuclear fuel cycle offer the prospect of resolving long-standing problems in the management of used nuclear fuel.

Second, on the global scale, many nations are ambitiously seeking to build up their nuclear power capacity. Most notable are the two most populated countries in the world, China and India, whose economies are undergoing rapid growth. A recent publication by the American Nuclear Society noted that there are over 433 reactors operating in 30 countries, producing 371 GWe, or about 14% of the global electricity supply. A recent presentation by DOE personnel notes 154 power reactors planned in 27 countries for the next 8-10 years costing over \$740B, and a total of 331 reactors proposed in 37 countries over the next 15 years at a projected cost of \$1.6T. These operating and soon-to-operate reactors comprise a substantial global market for equipment (e.g. turbines, generators, instrumentation), fuel, and services. The economic rewards of U.S. engagement in this growing global market are substantial by providing high paying jobs for Americans involved in the engineering design, analysis, parts manufacturing, operations, consulting, and potential construction of new reactors. For example, the four APR-1400 South Korean reactors to be built in the United Arab Emirates are essentially based on U.S. technology

and are worth billions of dollars to the U.S. economy including 5000 US jobs. International engagement is also an essential means of spreading the high U.S. technical and performance standards across the globe. The regulatory procedures in a large number of countries are adopted from U.S. regulations. A safety culture that transcends national boundaries and that is based on a solid scientific foundation and supported by decades of excellent American experience is the best guarantee that nuclear technology will remain an agent for improving the global environment.

Third, the growing number of nuclear-hopeful nations and the widening footprint of nuclear power raises concerns about nuclear proliferation to historic highs and makes a strong case for developing novel and better detectors and methods for verifying that nuclear materials are only being employed for peaceful purposes. These concerns cannot be addressed solely by controlling the flow of scientific knowledge and underlying technologies and require a revamped structure that better integrates the technical and policy aspects of the issue. In addition, the potential threat of nuclear terrorism is not likely to abate any time soon and demands the continuous and untiring vigilance of relevant agencies within the U.S. government.

Common to all these factors is the need for a highly educated nuclear workforce that is aware of national needs and that is well equipped to tackle them. The magnitude of this immense challenge was wisely recognized by the U.S. Congress and two administrations since 2009 when two programs designed to reinvigorate nuclear education in the U.S. were inaugurated: The IUP and the DOE NEUP. The Blue Ribbon Commission likewise recognized the importance of U.S. leadership in the nuclear area, and highlighted continued innovation in nuclear technology and workforce development as one of its eight major recommendations. The Nuclear Uniform Curriculum Programs at community colleges and programs that will improve craft training and apprentice programs with labor are also of great importance.

A decade ago Federal investment in R&D and nuclear education infrastructure was administered by DOE-NE. Support through scholarships, fellowships, equipment grants, research reactor upgrades, etc. was crucial to stemming the precipitous decline in the 1990's of nuclear academic programs and university research reactors. In 2008, foreseeing an impending nuclear human resource crisis fueled by an aging workforce and the rising prospect of mass retirements in all sectors of the nuclear industry, the DOE-NE created NEUP that directed approximately 20% of DOE-NE R&D funding towards universities in support of DOE-NE's research mission. In 2009 the IUP was created by the Congress to instill some degree of stability and coordination in the funding stream of nuclear education by providing sponsorship to the three federal agencies: DOE-NE, DOE-NNSA, and the U.S. NRC. These three arms of IUP were directed to support broad educational objectives via programmatic and non-programmatic awards, and to coordinate their support mechanisms in order to minimize duplication.

In the ensuing years these support schemes have succeeded in reviving nuclear academia, and expanded interest in nuclear research topics into other supporting disciplines such as material science, mechanical engineering, radiochemistry, and a number of others, leading to a fertile interdisciplinary research environment in support of the nation's research agenda.

All awards made via NEUP and IUP are competitive and have seen broad participation from individuals and institutions across the nation. To be specific, the NRC invested its share of IUP

in curriculum development grants, Junior Faculty Development grants, scholarships and fellowships awarded to selected universities, and in support of community colleges. DOE-NNSA now dedicates its support to the funding of the Nuclear Science and Security Consortium led by the University of California, Berkeley, and provides awards in programmatic support of basic research projects relevant to nuclear security.

The DOE-NE administers IUP through the NEUP in two separate funding streams. First, NEUP funds scholarships and fellowships awarded directly to student applicants. This program is distinct in its objectives from NRC's scholarship and fellowship program whose grants are awarded to academic institutions which then make them available to qualified matriculating students. Both DOE and NRC programs have been successful in attracting top talent to the field through these avenues. The NRC program also allows recruitment of high quality faculty who will ensure a stream of well-prepared young talent for innovative breakthroughs. In addition, DOE-NE has committed up to 20% of its R&D funds to support universities via competitive awards of varying levels of programmatic relevance. Some of these funds have been awarded in support of nuclear infrastructure at U.S. universities.

To appreciate the importance of IUP for the revival of nuclear engineering academia in the US we note that the elements of IUP cover the three primary missions of a research intensive university: education (undergraduate and graduate), research, and service. In the four years since its inception, the IUP has substantially contributed to the reversal in enrollment decline that dominated all the academic institutions a decade ago, even after the Fukushima event. Sustaining the IUP sends a clear message to university administrators for the need to support nuclear programs and to prospective students that their career investment in this field is desirable and will be rewarded.

In conclusion, we believe that federal funding has been instrumental in revitalizing nuclear academic programs and in giving impetus to several universities to start new nuclear programs. Continued funding support for federal programs aimed at educating and training the next generation of nuclear professionals needed by federal agencies, national laboratories, universities, and industry is crucial towards a long-term national energy plan that includes a comprehensive nuclear energy R&D funding strategy supporting basic research, applied research and deployment. Continued funding support is also crucial to maintain the U.S leadership in the safe, secure, safeguarded use of nuclear technology as more new countries start expanding their use of this technology. U.S. engineers, scientists and technologists have historically set the gold standard in these three areas. With your support, our NEDHO academic programs will be able to provide the next generation of expert personnel that is essential for us to continue to do so in the future.

Respectfully submitted

Testimony for the Record

Marvin S. Fertel
President and Chief Executive Officer
Nuclear Energy Institute
Appropriations Subcommittee on Energy and Water Development
U.S. House of Representatives
March 29, 2013

The Nuclear Energy Institute¹ (NEI) appreciates the opportunity to provide testimony on DOE and NRC programs to the House Appropriations Subcommittee on Energy and Water Development.

In general, NEI believes the federal government's nuclear energy research and development programs in Fiscal Year 2014 should focus on (1) developing technologies and other solutions that can improve the reliability, sustain the safety, and extend the life of current reactors; (2) developing new reactor types that will enable nuclear energy to help meet the nation's energy and environmental goals; (3) developing a sustainable used fuel management program; and (4) minimizing the risks of nuclear proliferation.

Specifically, the nuclear energy industry:

- Opposes reinstating a tax on nuclear power plant operators to pay the cost of decontaminating and decommissioning the federal government's uranium enrichment plants;
- Supports a robust and sustainable strategy for used nuclear fuel management;
- Supports funding for the DOE Office of Nuclear Energy, including the small modular reactor program;
- Supports safety-focused and more efficient regulation by the Nuclear Regulatory Commission (NRC);
- Supports completion of the Mixed Oxide (MOX) Fuel Facility, and
- Supports the reforms necessary to make the loan guarantee program a workable financing platform for clean energy technologies, including advanced nuclear power plants.

Uranium Enrichment D&D Tax

NEI strongly opposes any plan to reinstate the uranium enrichment decontamination and decommissioning tax, which would have a negative impact on consumers of electricity in an economy struggling to recover. Despite its negative impact on all consumers of electricity, the Obama Administration continues to propose reinstatement of this tax as a means of raising revenue. The three uranium enrichment plants in question operated for 25 years as defense facilities and were irretrievably contaminated long before any sales of enrichment services to the commercial industry. In addition, the industry has twice paid its share of the funds necessary to clean up these facilities – first, payment was received as part of the price for DOE uranium

¹ NEI is responsible for establishing nuclear industry policy on matters affecting the nuclear energy industry, including regulatory, financial, technical and legislative issues. NEI members include all companies licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, engineering/construction firms, fuel facilities, and other organizations and individuals involved in the nuclear energy industry.

enrichment services from the facilities, and again under the Energy Policy Act of 1992. Under the 1992 law, the tax on electric utilities was to end after 15 years or the collection of \$2.25 billion, adjusted for inflation. The industry paid this amount in full. The industry appreciates the support of the subcommittee in previous years to reject this proposal and again encourages members to continue to oppose this unjust tax on consumers.

Used Nuclear Fuel Management

First, consistent with current law, The Nuclear Waste Policy Act, Congress should provide sufficient funds to the Department of Energy and the Nuclear Regulatory Commission to complete the licensing of the proposed Yucca Mountain repository.

Second, NEI is disappointed that the Executive Branch has not proposed legislation to manage used nuclear fuel and high-level radioactive waste based on recommendations of the Blue Ribbon Commission on America's Nuclear Future (BRC). NEI urges the subcommittee to provide direction and funding to DOE in support of the following three BRC recommendations:

- Establish a new organization dedicated solely to implementing the nuclear waste management program and empowered with the authority and resources to succeed;
- Establish one or more consolidated storage facilities for used nuclear fuel while making substantial progress toward developing a repository for fuel disposal; and
- Provide access to the annual collections and corpus of the Nuclear Waste Fund for the purpose of managing used nuclear fuel.

Advanced Reactor and Fuel Cycle Technologies

NEI supports programs managed by DOE's Office of Nuclear Energy that seek to accelerate commercial deployment of new reactor technologies, sustain safe operation of the reactors that provide one-fifth of America's electricity and two-thirds of our nation's emission-free electricity, and develop advanced fuel cycles to manage used nuclear fuel. NEI considers certain programs as extremely high priority:

Small Modular Reactors (SMRs)

As originally conceived, the SMR licensing support program was to promote accelerated deployment of these technologies by supporting first-of-a-kind activities for design certification and licensing activities for up to two SMR designs through cost-shared arrangements with industry partners. One team was chosen from those that responded to the first Funding Opportunity Announcement (FOA), and DOE has released a second FOA to support an additional team or teams. NEI supports the second FOA and encourages the Department to complete the procurement process by September 2013, as it has proposed. Given the benefits to job creation, export value and domestic clean electricity supply, we encourage the subcommittee to ensure that this program is effectively and expeditiously implemented. Accelerated, near-term deployment is critical to ensure the international competitiveness of U.S. SMRs. Federal government cost-share funding for SMR development is necessary and appropriate. The subcommittee should ensure that this program is provided sufficient funds and certainty in funding – at a minimum the \$452-million, five-year program originally proposed by DOE –to achieve the mission.

Sustaining Safe Operation

NEI supports the Light Water Reactor Sustainability (LWRS) program, in which DOE has partnered with industry and the NRC to coordinate research needs and share costs. Industry is investing in the near-term research needs, and within the LWRS program DOE and the NRC are addressing the longer-term research. Among other issues, this federally-funded research provides the technical basis to manage age-related material science, and addresses post-Fukushima lessons learned, particularly advanced engineering of light water reactor fuel.

Advanced Fuel Cycle Technologies

NEI supports a systematic and focused program to develop advanced separations technologies and reactor types that can maximize the utilization of used nuclear fuel from commercial nuclear power production. At times like these, when budgets are constrained, NEI believes that this program should be focused on, and guided by, reasonable prospects for commercial deployment and, wherever possible, coordinated with industry and similar programs being pursued by our international colleagues.

Safety-Focused and Efficient Regulation

The nuclear energy industry's first priority is operating America's nuclear energy facilities safely and reliably. The companies that produce electricity at nuclear power plants continuously incorporate lessons learned from best practices at all U.S. facilities as well as operating experience worldwide. Safety enhancements made over more than 40 years, including new processes and procedures based on lessons learned from Fukushima, have resulted in sustained high levels of safety.

The industry welcomes the oversight of the NRC by Congress to ensure that the agency effectively prioritizes its activities, based on safety significance, and achieves closure on issues in a timely manner. The agency is making important initial progress in these areas – addressing the cumulative impacts of its regulatory activities – and the industry believes the agency should be encouraged to continue these efforts.

The NRC's annual budget has grown from \$442.1 million in 1990 (when the agency was regulating 112 reactors) to \$1.1 billion in 2012 (when the agency was regulating 104 reactors). The number of NRC employees increased from 2,881 in 1999 to over 4,000 in 2012. Recognizing that NRC licensees pay 90 percent of the \$1.1 billion budget of the NRC, we appreciate the subcommittee's oversight to ensure that NRC activities and budget are more transparent and cost effective.

NEI also continues to support NRC funding of the Integrated University Program, which provides important nuclear science and engineering research and workforce training at America's universities and community colleges. NEI hopes the subcommittee will maintain the funding level in FY2014 – at \$15 million – to enable NRC to continue its participation in this program.

Completion of the MOX Fuel Facility

NEI supports completion of the MOX fuel facility now under construction at the Savannah River Site in South Carolina. This facility, which is approximately halfway through construction and in which approximately \$4 billion has been invested, is important to U.S. national security and as a demonstration of America's commitment to nonproliferation. When operating, the facility will convert at least 34 metric tons (at minimum 17,000 weapons) of surplus weapons-grade plutonium into MOX fuel for use in commercial power reactors. It is estimated that the fuel produced from the MOX project would produce \$50 billion worth of electricity and enable the federal government to eliminate the expense of storage and surveillance of the plutonium in the future. Construction and operation of the MOX plant is the result of years of work and commitments with the Russian Federation, the state of South Carolina, and thousands of workers at the site and across the country. Each of those parties made commitments on the assumption that the U.S. government is a credible partner capable of fulfilling its arms control and nonproliferation commitments. Failure to complete this project will validate those critics of the government, and the DOE in particular, who claim it simply cannot complete complex projects, particularly those concerning nuclear materials disposition.

Reform DOE's Clean Energy Loan Guarantee Program

The nuclear industry appreciates the support provided in previous years by the subcommittee for the DOE loan guarantee program for new nuclear energy plants and nuclear fuel cycle facilities. NEI urges the subcommittee to maintain the appropriated funds for projects under development.

NEI continues to believe that the loan guarantee program authorized in the 2005 Energy Policy Act had (and continues to have) great potential. There is no cost to taxpayers for nuclear energy project loan guarantees, but there is significant benefit to consumers. The use of loan guarantees will lower the overall cost of nuclear energy projects, ultimately reducing the cost of electricity to consumers. Companies granted loan guarantees by DOE for nuclear energy projects must pay a premium (the credit subsidy cost) for use of the program, and cover all administrative costs.

New nuclear projects must have financing support—either loan guarantees from the federal government or assurance of investment recovery from state governments, or both. The states are doing their part. Throughout the South and Southeast, state governments have enacted legislation and implemented regulations to advance new nuclear plant construction. A comparable federal government commitment – in the form of a workable loan guarantee program – is essential.

For the nuclear energy industry, one of the most significant challenges involves determining the credit subsidy cost. NEI believes the methodology used by the Executive Branch inflates the credit subsidy cost well beyond the level required to compensate the federal government for the risk taken in providing the loan guarantee.

NEI encourages the subcommittee to require DOE – possibly through the Secretary of Energy Advisory Board – to conduct a systematic, disciplined, open assessment of implementation of the Title XVII loan guarantee program, identify the weaknesses in implementation, and develop recommendations to ensure that this program becomes the workable financing platform originally envisioned. This assessment must include consultation with, and participation by, the nuclear energy industry in order to understand fully the successes and failures in implementation.

April Snell, Executive Director, Oregon Water Resources Congress
Testimony submitted to the United States House of Representatives Committee on
Appropriations, Subcommittee on Energy and Water Development
March 29, 2013

RE: U.S. Department of the Interior's FY 2014 Budget for the Bureau of Reclamation

The Oregon Water Resources Congress (OWRC) continues to support an increase in funding for the Bureau of Reclamation's (Reclamation) Water and Related Resources program above the enacted FY 2012 and proposed FY 2013 funding levels for Reclamation programs west-wide. A minimum level of \$1 billion in the FY 2014 Budget is needed to meet the diverse water supply needs and increasing aging infrastructure needs in the 17 Western States that Reclamation serves. Funding for water supply needs serves benefits beyond upgrading aging infrastructure; it provides jobs and stimulates the local economy, prevents property damage and life loss, paves an avenue for a secure and safe water supply, and improves conditions for fish and wildlife. About one-half of our members are in Reclamation Projects. Additionally, most of our members have contracts with Reclamation or have been awarded grants under the WaterSMART program which has been greatly beneficial to districts meeting agricultural needs.

OWRC members are local governmental entities, which include irrigation districts, water control districts, drainage districts, and water improvement districts that deliver water for agricultural use. These local government entities operate complex water management systems, including water supply reservoirs, canals, pipelines, and hydropower production. OWRC has been promoting the protection and use of water rights and the wise stewardship of water resources on behalf of agricultural water suppliers for over 100 years.

WaterSMART Initiative

OWRC strongly supports increased funding for the WaterSMART Grants and Water Conservation Field Services Programs—the two programs that are used the most by Oregon's irrigation districts to support water conservation activities. The combined results of WaterSMART Grants along with other conservation programs are making progress toward the Department of Interior's goal of conserving 730,000 acre-feet of water by the end of 2013 and increase agricultural, municipal, industrial, and environmental water supply availability in the Western United States. These programs are an important part of the overall funding package for water conservation projects collaboratively developed by local communities, supported with local and state funding, and designed to meet those communities' unique needs while still meeting the goal of water conservation.

Water Conservation Field Services Program (WCFSP)

The WCFSP is a key component in supporting irrigation districts' and similar water delivery systems' water conservation efforts. In the past the WCFSP has provided a breadth of technical assistance to irrigation districts and provided partial funding for materials used to pipe and line canals, measurement and other technology, and water conservation plans—all supporting water conservation efforts being implemented by these districts. While we are supportive of exploring innovative ways to utilize reclaimed and reused water, we continue to be concerned about funding a few expensive projects in limited areas while there are large unmet needs in the other

WaterSMART programs. Providing increased funding for WCFSP projects will yield more immediate and cost-effective water conservation measures in all 17 Western States.

The planning projects and technical assistance funded under the WCFSP are key components that help our member districts identify opportunities for water conservation through improved water management and capital investments. A lack of funding for the feasibility phase of projects is an impediment to the districts' ability to move forward with implementing water conservation projects like those listed below. This program provides seed money for both short and long term planning by districts and water users that results in helping Oregon meet the competing demands for water in basins throughout the state. Furthermore, technical assistance under this program can help water suppliers plan for and adapt to potential impacts from climate change.

Additionally, we believe the management of the WCFSP should remain with the Regional Offices in order to retain the close connection between Reclamation and Project managers and ensure that Reclamation's resources are used to best support the management of its Projects. The WCFSP is one of the Reclamation services most appreciated by our members. The regional staff, and particularly the local area office staff, understand the unique operating and delivery challenges of the various Projects, and therefore provide very meaningful support to the managers of those Projects.

WaterSMART Grants

WaterSMART cost-share grants have supported Oregon districts' efforts to improve water delivery systems, conserve water, and implement innovative projects to meet the water needs in our state. These projects have been a key ingredient to the districts' efforts to work cooperatively with other stakeholders in their respective river basins to address the in-stream needs and water quality needs of their basins, without reducing the amount of land to which the districts deliver water, and avoiding enforcement actions by Federal or State agencies. There continues to be more applicants than available funding and increased funding is needed to enable local water suppliers to continue their work to conserve water and help meet the Secretary's water conservation goal. With a return of over \$5 for every \$1 of Federal investment, and non-federal match generally exceeding the required amount, this program far exceeds the results of other partnerships between the Federal government and local project sponsors.

Examples of Oregon Projects Funded through the WaterSMART Initiative

The following projects are examples of how Reclamation's WaterSMART Initiative is helping Oregon districts. More projects like these could be developed and implemented with additional federal support through the WaterSMART Program.

- ***Central Oregon Irrigation District, Malott Tail Water Recovery Project*** - The Central Oregon Irrigation District will construct a retention system, including installation of an energy efficient pump, to recapture and reuse irrigation, storm, and run-off water to decrease the amount of water deliveries necessary for irrigation. The project is expected to result in water savings of about 398 acre-feet annually, help to improve water quality in the Lower Crooked River, potentially benefitting reintroduced steelhead in that portion of the river. **Reclamation Funding: \$18,960**
Total Project Cost: \$257,178

- ***North Unit Irrigation District, Water and Energy Conservation Initiative Phase II*** - The North Unit Irrigation District will work with the Central Oregon Irrigation District (COID) to pipe one mile to address seepage losses. The project is expected to result in approximately 1,300 acre-feet of water savings annually and through a partnership with the Deschutes River Conservancy, conserved water will be marketed to restore instream flows in the Crooked River. The project will also lead to increased flows through existing turbines, which will enable COID to generate up to an additional 318,638 kilowatt-hours of energy each year and allow approximately 191,178 kilowatt-hours of energy to be saved annually through pumping reductions. **Reclamation Funding: \$300,000 (\$600,000 over 2 years) Total Project Cost: \$1,347,935**
- ***North Unit Irrigation District, Lateral 58-11 Piping Project*** - The North Unit Irrigation District will also pipe two miles of an earthen canal that currently loses a significant amount of water to seepage. The project is expected to result in water savings of approximately 673 acre-feet annually. Conserved water will be used to restore instream flows in the Crooked River. The District estimates that an average 158,155 kilowatt-hours of energy will be saved annually through pumping reductions. **Reclamation Funding: \$200,000 (\$942,982 over 3 years) Total Project Cost: \$1,923,447**
- ***Ochoco Irrigation District, Ochoco Main Canal Multi-purpose Screen and Automation*** - The Ochoco Irrigation District will install a new flume to allow more accurate water measurement, a new gate with automated control, and a multipurpose screen at the District's main canal diversion near the Ochoco Dam outlet. The project is expected to result in water savings of 2,870 acre-feet annually by reducing seepage and spills and approximately 656,640 kilowatt-hours of energy to be saved annually through reduced pumping of water from the Crooked River. **Reclamation Funding: \$146,909 Total Project Cost: \$299,814**
- ***Owyhee Irrigation District, Lower Owyhee River Rehabilitation Project Phase II*** - The Owyhee Irrigation District will convert 4.5 miles of existing open ditch conveyance to closed pipeline and will also install 20 advanced flow meters and an automated side sweep cleaner to improve the operational efficiency of the delivery system. The project is expected to result in water savings of about 188 acre-feet annually and is expected to facilitate future on-farm improvements by landowners who may take advantage of the pressurized system to convert from furrow irrigation to sprinkler and drip irrigation. **Reclamation Funding: \$299,000 Total Project Cost: \$1,161,004**
- ***Three Sisters Irrigation District, Watson-McKenzie Main Canal Pipeline Project*** - The Three Sisters Irrigation District will pipe 14,000 feet of the Watson-McKenzie Main Canal and will install meters at farm turnouts. The project is expected to result in water savings of approximately 1,850 acre-feet annually which will be dedicated for instream flows through the Deschutes River Conservancy. Additional water in Whychus Creek is expected to improve riparian habitat and benefit Bullhead Trout and Steelhead. The pressurized pipeline resulting from this project will also allow farmers who receive deliveries from the District to implement further improvements. **Reclamation Funding: \$750,000 (\$1,500,000 over 3 years) Total Project Cost: \$5,604,981**

Ecosystem Restoration

OWRC is supportive of funding to support collaborative ecosystem restoration efforts that support the environmental aspects of Reclamation's mission. Funding for the Columbia and Snake River Salmon Recovery Program is essential as Reclamation, the Bonneville Power Administration, the U.S. Army Corps of Engineers, and NOAA Fisheries prepare to meet the court-ordered January 1, 2014, deadline for a new Federal Columbia River Power System Biological Opinion that provides reasonable and prudent alternatives to mitigate impacts to Columbia-Snake river salmon and steelhead. We strongly encourage Reclamation to consider funding for fish passage and fish screening projects that can help meet these requirements. This type of funding could be leveraged with state and local efforts to maximize cost effectiveness and environmental benefits. Additionally, funding for the Klamath Project and the Klamath Basin Restoration Agreement will help support ongoing efforts to improve water supplies to meet the myriad of agricultural and environmental needs that depend upon it. Providing funding for these types of collaborative restoration efforts will lead to implementable, cost-effective water resources solutions that help reduce conflict and expensive litigation.

Reclamation-wide Aging Infrastructure

OWRC requests adequate funding to support necessary improvements and investigations in the 17 Western States. Many of the 824 dams and reservoirs that Reclamation manages (and associated delivery systems) were built 50 to 100 years ago and are in dire need of improvement. These improvements are costly and deferred maintenance leads to reduced system efficiency, water conservation, and in some instances catastrophic failure. The need to address aging infrastructure is even more crucial when potential climate change impacts are considered.

Bridging the Headgates MOU

The need for continued coordination among federal agencies is a significant issue. The Bridging the Headgates program established by a MOU between the Natural Resources Conservation Service (NRCS) and Reclamation has proven successful in coordinating their efforts and we support the reauthorization of this program. We made the same request in our testimony on the Department of Agriculture's FY 2014 budget for NRCS submitted to the Subcommittee on Agriculture, Rural Development, Food and Drug Administration which can be referred to for details of this request.

We respectfully request the appropriation of at least \$1 billion for Reclamation's Water and Related Resources program for FY 2014. Furthermore, we recognize the difficult nature of the ongoing federal budget discussions, but feel it is inappropriate and potentially detrimental to sequester funding for WaterSMART grants when we see how much positive benefits are occurring on the ground, and especially when there are other areas of Interior's budget that are not as proven or helpful in providing economic and environmental benefits. We would be happy to speak with Committee staff further about this issue. Thank you for the opportunity to provide testimony regarding the FY 2014 budget for the U.S Bureau of Reclamation's WaterSMART Program.

Sincerely,
April Snell, Executive Director

THE PORT OF HARLINGEN – HARLINGEN, TEXAS

**HOUSE ENERGY AND WATER DEVELOPMENT SUBCOMMITTEE
ON APPROPRIATIONS**

US ARMY CORPS OF ENGINEERS

**Contact: Pat Younger, Government Relations Liaison for the Port of Harlingen
713-465-6343 (office)
713-816-6477 (cell)
Email: youngerandassoc@aol.com**

**We express full support of the inclusion in the FY'14 budget for the full capability
of the USACE of..... \$2 Million - \$O & M**

HISTORY AND BACKGROUND

The Port of Harlingen Authority is a Navigation District of the State of Texas. The Port of Harlingen is located on the Arroyo Colorado River and Farm Road 106, on the eastern city limits of the City of Harlingen. The channel connecting the 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 by 1984 they increased to 801,003 short tons, with the port housing ten industries with commercial leases. In 1989 the Port of Harlingen handled 728,954 short tons of cargo. In 2009 the Port Harlingen handled 882,769 tons of cargo. In 2010 the port handled 972,236 tons of cargo. In 2011 the port handled 1,101,096 tons of cargo. In 2012 the Port of Harlingen handled 997,823 tons of cargo.

The port is located four miles east of the City 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 the east side of the City of 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' by 125'. 100% of all the sugar grown in the entire Rio Grande Valley (RGV) in south Texas is exported exclusively via the Port of Harlingen to a location on the Mississippi River, 95% of all commercial fertilizer products needed by all agricultural interests in the entire RGV of south Texas are imported via the Port of Harlingen and 70% of all gasoline products for the entire Rio Grande Valley (RGV) of south Texas is shipped through the Port of Harlingen. The Port of Harlingen also handles cement, sand, aggregates, building materials, roadway materials, ethanol, Anhydrous Ammonia, cotton, sorghum and other agricultural products. Maintenance of the project to authorized dimensions is a Federal responsibility. Safe and efficient commercial navigation is of national interest. The inability to maintain the project at authorized depths will cause safety hazards and severe economic loss to the agricultural, construction and petrochemical industries in the entire Rio Grande Valley south Texas region.

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. Terminals, warehouses, 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. The Union Pacific Rail Road (UPRR) and Burlington Northern Santa Fe (BNSF) serve the port and keep products moving to Texas locations and throughout the U.S. and Mexico. Additionally, as was stated in the project description above, 100% of all the sugar grown in the entire Rio Grande Valley (south Texas) is shipped exclusively via the Port of Harlingen to New Orleans on the Mississippi River, 95% of all commercial fertilizer products consumed by the various agricultural interests in the entire RGV are imported via the Port of Harlingen and 70% of all gasoline products consumed in the entire RGV 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 built a \$3,800,000 dollar sugar transfer warehouse to load barges of sugar for shipment to New Orleans, Louisiana. The Port of Harlingen has shipped as much as 172,000 short tons of sugar to Louisiana in any given year. The RGV Sugar Industry cannot ship raw sugar by rail or truck because it is not cost effective and the finish mills in Louisiana are not capable of receiving raw sugar by rail. Instead the raw sugar is shipped exclusively by barge. To ship the sugar by truck would take over 6,878 truckloads at four times the cost. If this occurs, recent economic studies have determined that it would put the RGV Sugar Industry out of business.

Additional industries and tenants present at the Port are: NuStar Energy, Helena Chemical Company, CEMEX, Crop Production Services, Favelle Favco Cranes, Gavilon Grain, Harlingen Cotton Gin, RGV Gin Company, Rio Grande Valley Sugar Growers Inc., Wilbur Ellis, RGV Sand Pit, RGV Mobile Concrete, Chalico Concrete Materials (CCM) and Earthwise Organics which have facilities at the port or downstream. CEMEX also has a terminal at the port that handles much needed concrete sand shipped from Victoria Texas and Cement shipped in from Mexico.

NuStar Energy Corporation actively receives all three grades of automotive gasoline, ultra-low sulfur diesel and ethanol at the Port of Harlingen by barge. The opportunity to import jet fuel via barge for the three International Airports located in the RGV is currently being explored. Container on barge is another opportunity being examined.

The Port of Harlingen also exports grain, sorghum, ultra-low sulfur diesel and liquid fertilizer to Mexico. The Port of Harlingen also provided all of the roadway building materials and cement used by the wind turbine farm developers in the region resulting in a 300% increase in such tonnage in FY2012.

WHAT WE NEED FROM THE SUBCOMMITTEE IN FY'14

Maintenance dredging of this channel is a federal responsibility. As deliberations on the Energy and Water Subcommittee on Appropriations commence, we would appreciate your help in securing the Corps capability of \$2 Million so that this project can move forward and ensure that the Gulf Intracoastal Waterway – Port of Harlingen receive essential maintenance dredging at the federally authorized depth.

Christine L. Rowe
Former West Hills Neighborhood Council member
(Advisory Body to the City of Los Angeles)
Santa Susana Field Laboratory –
Energy Technology Engineering Center Technical Stakeholder

House Appropriations Committee
Subcommittee on Energy and Water Development
Fiscal Year 2014 Appropriations

Dear Chairman Frelinghuysen, Ranking Member Kaptur, and Members of the Subcommittee. I want to thank you for the opportunity to comment on the Fiscal Year 2014 Appropriations for the Department of Energy's Office of Environmental Management.

I am a resident of West Hills, California which I believe is completely within the five mile periphery of the Santa Susana Field Laboratory – the location of the DOE Energy Technology Engineering Center (ETEC).

I have reviewed the statement of Ranking member Kaptur to Mr. Huizenga of DOE EM. I recognize that the Sequester is impacting all budgets and that some sites are more health related and environmentally sensitive than ETEC which is considered a small DOE site. I do understand that the promises were made to the communities when Congress was working with a greater budget. It is my understanding that there are 107 DOE sites, and that DOE is close to cleanup of 90 of them. Santa Susana (ETEC) is not, in my opinion, one of them.

I respectfully request that the House Appropriations Committee – Subcommittee on Energy and Water Development - consider one specific allocation to ETEC in the 2014 Budget. This would be for the funding of the removal of the remaining DOE structures in AREA IV of the Santa Susana Field Laboratory. Since I am not a DOE employee, I can only guess that this funding based on previous estimates may be in the range of \$15 - \$20 million; I have not asked this question of the ETEC Project Manager. In fact, no one at ETEC is aware that I am making this request.

Because of the Sequester, there is a tremendous concern in my community that the DOE will use this reduction in DOE funds as a justification not to remediate the ETEC site. Funding the removal of the structures in the 2014 Appropriations would give tremendous credibility to the DOE that they indeed intend to meet their commitments to my community. I am very concerned that if Congress does not fund the removal of these structures, that the Department of Energy will be sued by local activist groups. This will cost the DOE money for attorneys rather than demolition. It will extend the time of the project if it is not funded.

The DOE has been delayed in their demolition of these structures and the remediation of the site by two lawsuits: "NRDC, Committee to Bridge the Gap, and the City of Los

Angeles v the Department of Energy”. The decision in this lawsuit was that the DOE was ordered to perform an Environmental Impact Statement (EIS).

A second delay in the demolition has been the interpretation of DTSC of that order for an EIS. It is my understanding that at this time, there are no impediments by DTSC regarding the removal of the remaining structures – in fact, I believe that any further delay in this demolition will cause slippage to both the DOE and DTSC’s planned remediation schedules. It is my opinion, that DTSC is anxious to have the structures removed.

At this time due to a lawsuit by the primary landowner at Santa Susana – “The Boeing Company v the Department of Toxic Substance Control” - it is not clear what the cleanup standards will be for soil and water at this site. This case will be heard on appeal in the federal courts in the near future, and there should be more clarity for appropriations necessary for the remediation of the soil and water in time for the Fiscal Year 2015 Appropriations.

Thank you once again for opening the opportunity to interested stakeholders to weigh in for the Fiscal Year 2014 Appropriations.

Respectfully submitted,

Christine L. Rowe
West Hills, California resident
March 23, 2013



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Official Written Testimony for Fiscal Year 2014

Submitted by: Dr. Irene Fonseca
President, Society for Industrial and Applied Mathematics (SIAM)
&
Dr. David Levermore, Vice President for Science Policy, SIAM

Submitted to: Subcommittee on Energy and Water Development
Committee on Appropriations, United States House of Representatives

Testimony on: Department of Energy Office of Science,
FY 2014 Appropriations

March 29, 2013

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 in fiscal year (FY) 2014 at the highest possible funding level. In particular, we urge you to provide robust support for the Applied Mathematics Program within the Office of Advanced Scientific Computing Research (ASCR) within the Office of Science. We also emphasize the importance of support for graduate students, post-doctoral fellows, and early career researchers.

Written Testimony

We are Dr. Irene Fonseca, President, and Dr. David Levermore, Vice President for Science Policy, of the Society for Industrial and Applied Mathematics (SIAM). On behalf of SIAM, we are submitting this written testimony for the record to the Subcommittee on Energy and Water Development of the Committee on Appropriations of the U.S. House of Representatives.

SIAM has approximately 14,000 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 500 institutional members—colleges, universities, corporations, and research organizations. SIAM members come from many different disciplines, but have a common interest in applying mathematics in partnership with computational science towards solving real-world problems.

First, we would like to emphasize how much SIAM appreciates your Committee'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.



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economy, workforce, and society. DOE was one of the first federal agencies to champion computational science as one of the three pillars of science, along with theory and experiment, and SIAM deeply appreciates and values DOE activities.

Today, we submit this testimony to ask you to continue your support of the DOE Office of Science in FY 2014 and beyond. In particular, ***we request that you provide the Office of Science with the highest possible funding level.*** 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 remain crucial as they help to maintain U.S. pre-eminence in innovation, upon which our economy and fiscal health depend.

The Role of Mathematics in Meeting Energy Challenges

The nation faces critical challenges in energy, including in energy efficiency, renewable energy, improved use of fossil fuels and nuclear energy, future energy sources, and reduced environmental impacts of energy production and use. As DOE and the research community design a long-term strategy to tackle these issues, the tools of mathematics and computational science (theory, modeling, and simulation) have emerged as a central element in designing new materials, predicting the impact of new systems and technologies, and better managing existing resources. Already, mathematical and computing researchers in universities, national laboratories, and industry are providing insights that propel advances in such fields as nanotechnology, biofuels, genomics, climate modeling, and materials fabrication.

To tackle many of these challenges, DOE must be able to understand complex systems such as the US power grid, the dispersion of nuclear radiation after a disaster, and the Earth's climate system. These and other complex systems have high levels of uncertainty, lack master plans, and are susceptible to breakdowns that could have catastrophic consequences. Understanding complex systems helps mitigate these risks and facilitate the development of controls and strategies to make systems more efficient.

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 urges increased support for the Mathematical, Computational, and Computer Sciences Research activity programs to restore balance between research activities and facility investments.

SIAM supports Office of Science plans to fund research to manage ever-growing data volumes in science. The explosion in data available to scientists from advances in experimental equipment, simulation techniques, and computer power is well known, and applied



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mathematics has an important role to play in developing the methods and tools to translate this shower of numbers into new knowledge.

SIAM also supports balanced funding for research to develop exascale computing, noting that investments in algorithm research and software development are essential to developing the next generation of high performance computers, realizing the full benefits of these new machines, and transferring those capabilities to industry for broad economic benefit.

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 U.S. Currently, the economic situation is negatively affecting the job opportunities for young mathematicians--at universities, companies, and other research organizations. It is not only the young mathematicians who are not being hired who will suffer from these cutbacks. The research community at large will suffer from the loss of ideas and energy that these graduate students, postdoctoral fellows, and early career researchers bring to the field, and the country will suffer from the lost innovation.

Maintaining the pipeline of the mathematical workforce with programs that fund research and students is especially important because of the foundational and cross-cutting role that mathematics and computational science play in sustaining the nation's economic competitiveness and national security, and in making substantial advances on societal challenges such as energy. DOE programs support the educational and professional development of the researchers at universities, companies, and the national laboratories who will tackle the research problems needed to change energy usage in this country.

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.

Conclusion

The programs in the Office of Science, particularly those discussed above, are important elements of DOE's efforts to fulfill its mission. They contribute to the goals of dramatically transforming our current capabilities to develop new sources for renewable and low-carbon energy supplies and improve energy efficiency to ensure energy independence and facilitate DOE's effort to increase U.S. competitiveness by training and attracting the best scientific talent into DOE headquarters and laboratories, the American research enterprise, and the clean energy economy.



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We would like to conclude by thanking you again for your ongoing support of the DOE Office of Science and the actions you have already taken to enable DOE and the research and education communities it supports, including thousands of SIAM members, to undertake the activities that contribute to the health, security, and economic strength of the U.S. The DOE Office of Science needs sustained annual funding to maintain our competitive edge in science and technology, and therefore we respectfully ask that you continue your support of these critical programs.

We appreciate the opportunity to provide testimony to the Committee on behalf of SIAM and look forward to providing any additional information or assistance you may ask of us during the FY 2014 appropriations process.



SOUTHERN NEVADA
WATER AUTHORITY

STATE OF NEVADA



COLORADO RIVER COMMISSION
OF NEVADA

March 29, 2013

Statement of
Southern Nevada Water Authority (SNWA)
and
Colorado River Commission of Nevada (CRCN)

to the
House Appropriations Committee
Subcommittee on Energy and Water Development

Presented by
Patricia Mulroy, General Manager, SNWA
and
Jayne Harkins, P.E., Executive Director, CRCN

Support for Fiscal Year 2014 Continued Federal Funding for the
Colorado River Basin Salinity Control Program
under Reclamation's Basinwide Program

Waters from the Colorado River are utilized by approximately 40 million people for municipal and industrial purposes and used to irrigate approximately four million acres in the United States. Natural and man-induced salt loading of the Colorado River creates environmental and economic damages. The U.S. Bureau of Reclamation (Reclamation) has estimated the current *quantifiable* damages at about \$376 million per year. Congress authorized the Colorado River Basin Salinity Control Program (Program) in 1974 to offset increased damages caused by continued development and use of the waters of the Colorado River. Modeling by Reclamation indicates that the *quantifiable* damages would rise to approximately \$577 million by the year 2030 without continuation of the Program. Congress directed the Secretary of the Interior to implement a comprehensive program for minimizing salt contributions to the Colorado River. Reclamation serves as the lead federal agency in implementing the Program. **Reclamation** primarily institutes salinity control through its **Basinwide Program**. Funding levels have fallen behind in recent years, and a funding level of **\$15.4 million** is required in FY2014 to prevent further degradation

of the quality of the Colorado River with a commensurate increase in downstream economic damages.

The Environmental Protection Agency (EPA) has identified that more than 60 percent of the salt load of the Colorado River comes from natural sources. The majority of land within the Colorado River Basin is federally owned and administered. In implementing the Colorado River Basin Salinity Control Act (Act) in 1974, Congress recognized that most of the salt load in the Colorado River originates from federally owned lands. Title I of the Act deals with the United States' commitment to the quality of waters being delivered to Mexico. Title II of the Act deals with improving the quality of the water delivered to users within the United States. This testimony deals specifically with the Title II efforts.

In the early years of the Program, Reclamation implemented salinity control through large projects which were funded with specific line item amounts. In 1995, Congress amended the Act and created Reclamation's Basinwide Program. Under the Basinwide Program, Reclamation funds competitive proposals which will decrease the salt load to the Colorado River. Most of the received proposals target off-farm irrigation distribution systems such as canals and laterals. The lining or piping of canals and laterals prevents leakage into the groundwater and the dissolution and transportation of salts to the Colorado River and its tributaries. It is more efficient for Reclamation to perform the off-farm distribution system improvements prior to the USDA Natural Resources Conservation Service (NRCS) treating the on-farm acres with salinity control practices (i.e., Reclamation should pipe a canal or lateral prior to NRCS installing a pressurized sprinkler system on the farm). Shortfalls in recent Basinwide Program funding levels have led to inefficiencies in the implementation of the overall Program. The funding amounts identified above and in the graph below are required to get the Basinwide Program back on pace with the overall Program implementation needs.

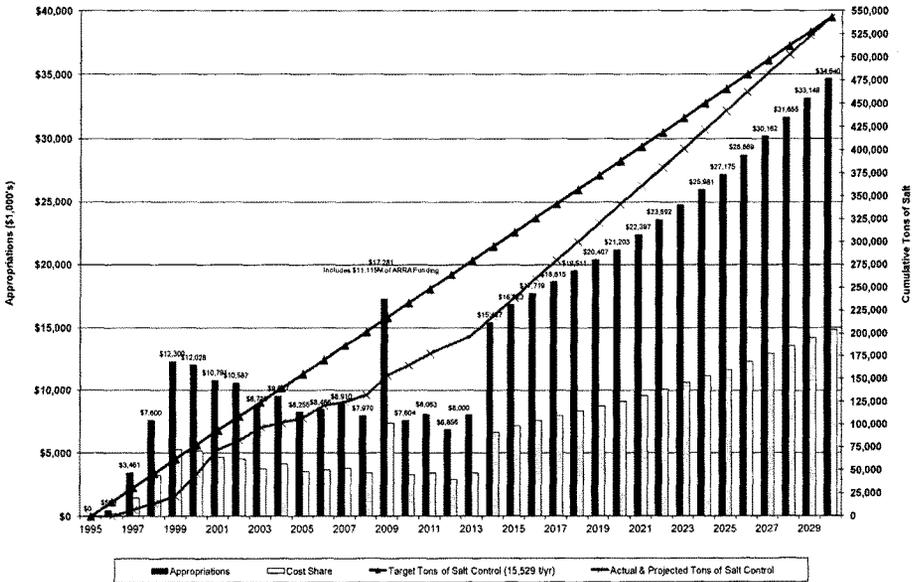
Concentration of salt in the Colorado River causes approximately \$376 million in quantified damages and significantly more in immeasurable damages in the United States and results in poor water quality for United States users. Damages occur from:

- a reduction in the yield of salt sensitive crops and increased water use to meet the leaching requirements in the agricultural sector;
- increased use of imported water and cost of desalination and brine disposal for recycling water in the municipal sector;
- a reduction in the useful life of 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 cost of cooling operations 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; and

- 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.

The Colorado River Basin Salinity Control Forum (Forum) is composed of gubernatorial appointees from the Basin States (Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming). The Forum is charged with reviewing the Colorado River’s water quality standards for salinity every three years. In so doing, it adopts a Plan of Implementation consistent with these standards. The Plan of Implementation, as adopted by the Basin States and approved by EPA, calls for 368,000 tons of additional salinity control measures to be implemented by Reclamation by 2030 or approximately 20,000 tons of new control each year. Based on current cost levels, Reclamation’s funding under its Basinwide Program needs to be \$15.4 million in FY2014. The level of appropriation requested in this testimony is in keeping with the adopted Plan of Implementation. 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.

**Basinwide Program: Controlling 20,286 tons salt/per year
Beginning FY 2014**



The graph above shows the historic funding levels for Reclamation’s Basinwide Program from formation through FY2013 and needed funding levels for FY2014 through FY2030. The black

bars indicate the appropriated amount and the green bars indicate the commensurate cost share. The blue line designates the initial target of salinity control while the red line specifies the actual control up through FY2013 and the required control from FY2014 through FY2030.

In summary, implementation of salinity control practices through Reclamation's Basinwide Program has proven to be a very cost effective method of controlling the salinity of the Colorado River and is an essential component to the overall Colorado River Basin Salinity Control Program. Continuation of adequate funding levels for salinity within this program will prevent the water quality of the Colorado River from further degradation and also prevent significant increases in economic damages to municipal, industrial and irrigation users. A modest investment in source control pays huge dividends in improved drinking water quality to nearly 40 million Americans.

WRITTEN STATEMENT OF
THE STATE TEACHERS' RETIREMENT SYSTEM
STATE OF CALIFORNIA

BEFORE THE

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
HOUSE COMMITTEE ON APPROPRIATIONS

Submitted for the Record
May 10, 2013

**Department of Energy – Elk Hills School Lands Fund
(Budget Account No. 89-5428-0-2-271):
\$15,579,815 for FY14 - Final Installment of Elk Hills Compensation**

**Congress Should Appropriate the Funds Necessary to Fulfill
the Federal Government's Settlement Obligation to Pay Compensation for
the State of California's Interest in the Elk Hills Naval Petroleum Reserve**

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 to private industry 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 Administration's Budget for FY 14 shows a positive balance of \$16 million available in the Elk Hills School Lands Fund for payment to California and provides: "On August 3, 2011, the Department [DOE] and the State agreed on the final payment of \$15,579,815 with respect to the longstanding claim on [Elk Hills]." (Budget Appendix, at p. 395). The State respectfully requests the appropriation by Congress of \$15,579,815 for the final installment of Elk Hills compensation to fulfill 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 FY 1996 (Public Law 104-106) that mandated the sale of the Elk Hills Reserve to private industry, Congress reserved nine 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 nine percent of the sales proceeds in annual installments over an extended period.

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

Federal Revenues Maximized by Removing Cloud of State's Claim in Advance of the Sale

The State entered into a binding waiver of rights against the purchaser in advance of the bidding for Elk Hills by private purchasers, thereby removing the cloud over title being offered to the purchaser, prohibiting the State from enjoining or otherwise interfering with the sale and removing the purchaser's exposure to treble damages for conversion under State law. In addition, the State waived equitable claims to revenues from production for periods prior to the sale. The Reserve thereafter was sold for a winning bid of \$3.53 billion in cash, a sales price that substantially exceeded earlier estimates.

Congress Should Appropriate \$15,579,815 for FY 2014 for the Final Installment of Elk Hills Compensation Due to the State

The State's nine percent share of the adjusted Elk Hills sales price of \$3.53 billion is \$315,099,815 (after deducting the State's share of the sales expenses). As Congress had directed in the 1996 Act that mandated the sale of Elk Hills, nine percent of the net proceeds were reserved in a contingent fund in the Treasury for payment to the State. 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 one percent across-the-board rescission under the FY 2006 Defense Appropriations Act, for total appropriations to date of \$299.52 million of Elk Hills compensation owed to the State.

The Administration's Budget for FY 14 shows a positive balance of \$16 million available in the Elk Hills School Lands Fund for payment to California and provides: "On August 3, 2011, the Department [DOE] and the State agreed on the final payment of \$15,579,815 with respect to the longstanding claim on [Elk Hills]." (*Budget of the United States Government, Fiscal Year 2014 – Appendix*, at p. 395, Account No. 89-5428-0-2-271). Thus, the provision for Elk Hills compensation is a line item in the Federal budget; it is not an earmark.

The State respectfully requests the appropriation by Congress of \$15,579,815 to fulfill the Federal Government's obligation to the State under the Settlement Agreement.

For more information, contact:

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House Appropriations Committee
Subcommittee on Energy and Water Development
Outside Witness Testimony – FY 2014
March 29, 2013

The Status and Needs of Advanced Transmission Conductors,
Power Electronics, and Grid Components.

Presented By:

Ashley Thompson
And
Dr. L. R. (Bob) Lawrence, Jr.

Bob Lawrence & Associates
667 South Washington Street
Alexandria, VA 22314

The United States Electric Grid:

Mr. Chairman and Members of the Subcommittee: We thank you for the opportunity to present this Outside Witness Testimony on behalf of our company, Bob Lawrence & Associates, Inc., located in Alexandria, Virginia. Our testimony discusses the present status of the American Electric Power Grid and the high degree of promise for research addressing transmission conductors, power electronics, and superconducting grid component options. We recommend \$21 Million within the DOE Office of Electricity Delivery and Energy Reliability (OE) for FY 2014 to address these key areas of research.

Presently, the United States Electric Power Grid contains many segments which are constrained or congested. In the coming years, electric use will continue to increase, further exacerbating the problem. As the demand for higher quality electricity continues to grow, along with the need to better integrate renewable resources, more sophisticated transmission technologies and power system understanding will be required to assure the reliability and security of the power grid.

The best official government description of this situation and the potential solutions appears in the mission statement for the Office of Electricity Delivery and Energy Reliability (OE) within the 2012 Congressional Budget Request. This mission statement was meant to lead a national effort to modernize the electric grid. Modernization of the electric grid encourages three overarching benefits: 1) facilitating a greater adoption of variable and intermittent renewable resources; energy efficient buildings; appliances; industrial equipment; and electric vehicles;

2) Improving the energy efficiency of the electric transmission and distribution system; and, 3) enhancing energy security by increasing resilience to electric supply disruptions.

OE's 2012 funding request supported the development of technologies, tools, and techniques that could increase grid flexibility, enable a range of generation resources, maintain grid reliability and security in the face of increasing complexity and demand, and increase grid efficiency to minimize cost and energy consumption. The request continued support for state and regional partners to facilitate grid modernization and new transmission, and worked to enhance protection of the energy infrastructure against physical and cyber disruptions, and quickly restore energy when disruptions would occur.

Low-level transmission congestion is very common. Broadly speaking, there are three ways to mitigate congestion where it is significant enough to merit remediation. These are: 1) reduce electricity demand in the congested area through energy efficiency and demand management programs; 2) build more generation capacity close to the demand area; and 3) build additional transmission capacity so as to enable more electricity to be delivered from distant generators. Electric system planners frequently find that a combination of the three approaches is most desirable.

(<http://energy.gov/oe/services/electricity-policy-coordination-and-implementation/transmission-planning/2012-national>)

National Electric Transmission Congestion Study

Section 216(a) of the Federal Power Act, as amended by the Energy Policy Act of 2005, directs the U.S. Department of Energy (DOE) to conduct a study every three years on electric transmission congestion and constraints within the Eastern and Western Interconnections. The American Reinvestment and Recovery Act of 2009 (Recovery Act) further directs the study to include an analysis of significant potential sources of renewable energy that are constrained by lack of adequate transmission capacity. Based on this study, and comments from states and other stakeholders, the Secretary of Energy may designate any geographic area experiencing electric transmission capacity constraints or congestion as a National Interest Electric Transmission Corridor (National Corridor). DOE has published studies from 2006 and 2009; the 2012 study is being prepared. The studies conclude:

“Despite widespread agreement on the strategic importance of our transmission infrastructure, there is no comprehensive, consistent information on transmission usage and new transmission investment. In particular, there are no uniform reporting requirements. Substantial data are available from the regions with organized markets (CAISO, ISO-NE, MISO, PJM, NYISO, SPP), but much less are available from the non-market regions, which cover at least 1/3 of the nation geographically. Data from the regions with organized markets are often not comparable. Each RTO and ISO has its own definitions, practices, and formats for calculating and publishing

LMPs and congestion costs. The RTOs and ISOs change their footprints and market designs from time to time, making trend assessment more difficult.

The Department seeks discussion with other government agencies, utilities, and others on several possible actions to improve transmission data. Including work with FERC, NERC, and EIA to define and collect consistent information on transmission construction, utilization, reliability, and operating practices, and to make aggregated information publically available."

Main Grid elements to be addressed: Conductors and Power Electronics (PE).

During the late 1990's, 3M scientists investigating potential new uses for metal-matrix composites focused their attention on developing a substitute for the steel core wires used in conventional conductors used to transmit electrical power over high-voltage lines. Steel was the standard for utility transmission for nearly a century, but it incurred limitations due to its weight and the rate of sag under high temperatures.

In 1999, a prototype of 3M Aluminum Conductor Composite Reinforced (ACCR), showed to be substantially lighter than steel and possessed the capability to be installed within existing infrastructure. The new core upgraded the line's capacity substantially, doubling it in many cases, and significantly reducing the sag potential. The core also demonstrated the durability and longevity of traditional steel core conductors, even when operated continuously at high temperatures.

Because 3M ACCR can as much as double transmission capacity on existing lines, often without rebuilding towers or expanding rights-of-way, the electric power industry has embraced it as an efficient, reliable, and cost effective way to reduce overloading and increase transmission capacity. In 2011, 3M celebrated the production of its 1,000th mile of ACCR conductor. Today, this number is over 2000 miles. More than 30 utilities, in a dozen nations on four continents, adopted the technology, helping to make these milestones possible. And, with the growing need for a robust grid to accommodate new uses such as renewable and electric vehicles at a high level of reliability, 3M anticipates that its breakthrough overhead conductor will soon find use in a rapidly expanding range of applications. The point here is that this conductor is a "first of its kind," and research needs to be done on other similar options which can improve conductors even more! There are huge benefits for the country here!

Power Electronics (PE), according to DOE, will play a critical role in transforming the current electric grid into the next-generation grid. Existing silicon-based PE devices enable electric grid functionalities such as fault-current limiters and converters. Devices include switches, surge controllers, VAR controllers, and flow controllers. Solid-state wide bandgap (WBG) semiconductor electronics are envisioned to improve the reliability and efficiency of the next-generation grid substantially. VAR controllers can take the place of actual generators which are

used to create or control reactive power. The ultimate goals of advanced Power Electronics include: enhanced grid capacity; increased reliability; and cleaner frequency with fewer harmonics.

Improvements in both power electronics (PE) systems and the devices on which they are based, will provide important components in developing a smart grid and facilitating the integration of renewable energy sources into the electric grid. Advanced PE devices and systems will allow for increased power flow control and increased reliability of the electronic power system. They will also allow for precise and rapid switching of electric power to support long-distance transmission and advanced distribution topologies.

Currently, however, Si based semiconductors cannot handle required power levels and switching frequencies of next generation utility infrastructure. To address these issues, wide band gap (WBG) materials are needed; the preferred options being SiC, GaN, and Diamond, with Diamond being a far future option. OE's Smart Grid Research and Development Multi-Year Program Plan explains that PE devices based on these WBG semiconductor materials could increase the reliability and efficiency of the next generation electric grid. The materials offer the potential for sustaining higher switching speeds and frequencies, higher blocking voltages, better thermal conductivities, and higher junction temperatures than traditional Si-based equipment. Devices and components based on WBG materials are expected to substantially improve power flow, power switching efficiency, and reliability with reduced size and weight compared to Si.

Power electronics was not appropriated any money in 2010, but requested \$9.72M for 2012.

High Temperature Superconductivity (HTS) Options:

Superconductivity refers to the ability of a material to conduct electricity with no resistance. Resistance-free superconductivity normally occurs in very limited combinations of elements, at the temperature of liquid helium or hydrogen, approaching absolute zero, or 0 Kelvin (K). In April 1986, 75 years following the initial discovery of superconductivity, the term High-Temperature Superconductivity (HTS) was first used when there was discovered a new, superconducting family of cuprate-perovskite ceramic materials. These materials exhibited superconducting properties above the boiling point temperature of liquid nitrogen, 77 K. These properties, when incorporated into the upgrading of today's electric grid, have the promise of providing huge advantages over present technology. Next to copper wire, HTS wires can carry five to 20 times more current in the same unit area while reducing the amount of energy lost by 75-97% (depending on the current).

In 1986, the HTS properties were discovered in small, centimeter-squared wafers. Today, superconducting cables are made in kilometer lengths, and all the modern countries of the world have superconducting research programs. Transformers, fault current limiters, and cables are made from HTS. Inexplicably, the Department of Energy has now terminated the program. Wrong decision. This program has, consistently, produced dramatically improving results and must be reinstated.

We thank you for the opportunity to present this testimony.



Universities Research Association, Inc.

STEVEN C. BEERING
 EXECUTIVE CHAIRMAN, BOARD OF TRUSTEES, UNIVERSITIES RESEARCH ASSOCIATION, INC.
 TESTIMONY FOR THE RECORD: DOE FY 2014 BUDGET
 SUBMITTED TO THE
 SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT AND RELATED AGENCIES
 U. S. HOUSE COMMITTEE ON APPROPRIATIONS
 MARCH 29, 2013

Chairman Frelinghuysen, Ranking Member Kaptur, members of the Committee, on behalf of Universities Research Association, Inc. (URA), I appreciate this opportunity to comment on the upcoming FY 2014 budget for the Department of Energy (DOE). URA, a non-profit organization comprised of 86 of the nation's premier research universities. With the University of Chicago, through the Fermi Research Alliance, LLC, we are the DOE contractor for the management and operation of the Fermi National Accelerator Laboratory (Fermilab).

I write to express grave concern for the future of fundamental research in the physical sciences in light of the continuing decline in federal investments in high energy and particle physics research. Scientific research is critical to innovation, and forms the foundation for job creation, economic growth, and global competitiveness. Studies have demonstrated unequivocally double-digit percent returns on the nation's investments in fundamental discovery research. Once in an unquestioned lead role across all fields of research, the U.S. now faces significant competition from other countries, like China, that fully understand the importance of investment in basic science and technology for economic growth.

URA appreciates and supports the President's commitment to fund the DOE Office of Science at approximately \$5 billion annually. But URA must again express its concern over the President's recommendation for the High Energy Physics (HEP) program and other elements of the nation's portfolio of funding for basic research. The HEP program, as an example, has been proposed for reductions in funding over the past several years. Investment in high energy and particle physics in particular has been in decline over the past several years, even while the overall budget of the Office of Science has grown. The President's proposed allocation of these funds has resulted in an imbalance in the portfolio of basic research that underpins the missions of the Department and contributes to sustained national growth and wellbeing.

Such reductions have resulted in a dramatic cut for Fermilab in Illinois, the nation's only remaining national laboratory devoted to high energy physics research. The current Continuing Resolution is expected to result in a reduction of approximately \$30 million (9 percent) below last year's funding level for Fermilab. To adjust to the lower estimate of the budget for Fermilab based on the President's budget request of last year alone, Fermilab had to reduce its workforce by approximately 80 FTEs, a reduction that included highly skilled technical staff across the laboratory. Over the past three years, Fermilab's staff has been decreased by about 180 FTEs (9 percent) to accommodate budget reductions and the need for some increased investment in facilities underpinning future experiments.

These reductions are proposed at a time when, to ensure that it continue to be among the world's leaders in global research and discovery, the United States should be reinvesting in High Energy Physics (HEP) and Fermilab. HEP is the only field within the DOE Office of Science to have already consolidated its portfolio and closed projects early (e.g. the B-Factor at Stanford University). It shut down its major operations at Fermilab's Tevatron accelerator in September 2011, even when the overwhelming recommendation of the HEP community, including several Nobel Laureates, was to continue operations

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for three additional years. Nevertheless, Fermilab proceeded to squeeze existing budgets to redirect funding to new, exciting, world-leading science. After intensive and careful planning, Fermilab is now fully ready to begin new experiments that will put the United States at the forefront of studies of neutrinos, a key area of study to better understand the Standard Model of Particle Physics and how the universe began.

Unfortunately, the savings achieved by the shutdown of the Tevatron are not being reinvested in the United States' preeminent physics laboratory at Fermilab, which has had little capital investment for more than a decade. The most damaging proposed cut in the President's recent budget request is to the Long Baseline Neutrino Experiment (LBNE). Budgets submitted proposed to cut this program by more than half, from about \$21 million to \$10 million, limit funding to research only, and halt the program engineering and design (PED) work, the planning phase of the project. Should this proposal be submitted to Congress and enacted, the expertise of the LBNE team and momentum on the project would be lost.

HEP has blazed the path of international cooperation on large scientific projects with scientists collaborating on the planning, design, construction, and operation of facilities all over the world. The field hosts thousands of researchers each year at its various experiments, and serves as a premier training ground for American university students to develop the next generation of scientists, engineers, and technicians to carry out discovery science and innovation. The field of HEP has, more than any other, demonstrated and preserved through the years its ability to organize and execute highly technical and demanding, first-of-a-kind, large engineering and construction projects. Maintaining U.S. capability to carry out such large projects is itself in the nation's vital interest. Moreover, HEP, and Fermilab in particular, have long reached out to K-12 students to engage their interest in the STEM (science, technology, engineering, and mathematics) fields, which are so important to the future economic competitiveness of the nation. Europe, Japan, and China welcome U.S. researchers to their facilities, and for decades there has been a balanced international program with exceptional collaboration in this field, as characterized by thousands of foreign participants at Fermilab over the years.

Fermilab is working to develop partnerships with other nations to strengthen such collaborations and pursue international contributions to major experiments, such as LBNE. LBNE will be Fermilab's flagship experiment for the next 20 years and the foremost neutrino facility in the world. It has been structured in phases and has passed the Critical Decision (CD)-1 phase. There is strong interest from the European scientific community and India to collaborate on this project and contribute funding to it. But with diminishing DOE investment in the most basic research and the proposed suspension of planned work on LBNE, sustaining these relationships will be most challenging.

The America COMPETES Act, reauthorized by Congress in December 2010, affirmed a bipartisan commitment to double the science budgets of DOE and NSF over the next 10 years. Funding for research in the physical sciences, in constant dollars, has been essentially flat since 1989. We recognize the urgency of the nation's current budget situation. But the economic and employment growth needed to deal with it over the long term is not achievable without the sustained, long term support of the innovation and research in which the physical sciences play a key role.

As an organization representing 86 universities in partnership to operate and manage Fermilab, URA urges the Subcommittee to support funding for High Energy Physics within an overall balanced research program in the basic physical sciences within the Office of Science, and to restore funding to High Energy Physics and priority projects at Fermilab, including LBNE, as a key element of our country's investment in this core discipline of discovery science.



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**Statement of Willie Gregory, President
Yazoo-Mississippi Delta Levee Board
March 27, 2013**

This is a reminder to the U.S. House of Representatives Appropriations Subcommittee on Energy and Water Development of the Mississippi River and Tributaries (MR&T) system performance in 2011 and 2012. The investment protected by the MR&T system during the 2011 flood was \$234 billion with cumulative damages prevented by the MR&T system being \$612 billion and a return on federal investment of 44 to 1. These prevented damages do not include the return for low water benefits. The hydraulic improvements made by the construction of dikes, cutoffs and channel improvements that allowed a record flood by volume to flow at a lower elevation, are the same improvements that allowed barge traffic to move during the near record lows experienced throughout the Mississippi River in 2012. **Because of these facts we respectfully request an appropriation in the sum of 500 million dollars for the Mississippi River and Tributaries Project.**

First, let me thank the Congress for the support and funding you have provided in the past. This funding proves your awareness of the importance of flood control projects throughout the Mississippi River Valley.

The Mississippi River and Tributaries Project was authorized following a record flood in 1927 that inundated more than 26,000 square miles of the Mississippi River Valley. Over 700,000 people were left homeless and many lives were lost. Most, if not all, East-West commerce was stopped and it adversely affected the economy and the environment of our nation. After that devastating event Congress in its infinite wisdom passed a bill and established the Mississippi River and Tributaries Project and authorized the U. S. Army Corps of Engineers to develop a plan to prevent such a disaster in the future. This project currently is a separate line item in the budget. To remove it will destroy the continuity of this high value and much needed project.

To date the MR&T Project has prevented flood damages and provided other benefits resulting in a current benefit/cost ratio of over \$44 to \$1. Truly this is a wise investment for our nation. Likewise, countless lives have been spared due to the construction of this great project. Also, our nation receives nearly one billion dollars of navigational benefits each year due to this project. It is readily seen this project had merit from the beginning and continues to reward the citizens not only of the valley itself but the citizens of the entire nation. It is a wise investment for this country and it is good for our economy. It will be a vital link to the defense of our nation in the event of an attack by our enemies. This project must be targeted for swift completion and then properly maintained. What an investment for our great nation this project has been! Find any other project of any nature which approaches this ratio.

The performance of the comprehensive Mississippi River and Tributaries system and the Ohio Valley reservoir system during the 2011 flood on the lower Mississippi River validates the wise investment the nation made to prevent another calamitous natural disaster like the 1927 flood, the devastating event that changed America and forcibly unified its people to support protection of lives and property from the fury of the river. The MR&T system performed as designed,

despite rainfall exceeding 600 to 1,000 percent of the normal average rainfall in a two-week period from April 21-May 3 over a significant portion of six states that coincided with the arrival of the upper Mississippi spring snowmelt crest. The significant flood event established many new record discharges and stages along the lower Ohio and Mississippi rivers. Unlike the 2011 flood, the Mississippi River during the benchmark and calamitous Great Flood of 1927 inundated most of the alluvial valley. Like the toppling of a series of dominoes, one overmatched levee after another burst under the unprecedented pressure exerted by the swollen river.

At a time when we need to stimulate our economy, at a time that safety from terrorist activities needs to be enhanced and at a time that many in our nation are concerned about cleaner air, cleaner water, etc., we have a great opportunity to meet those needs. We must make sound investments into our infrastructure which will give back more monies to the taxpayers of this country than was invested while at the same time increasing our defense capabilities should our nation be attacked from an outside force.

Local interests have done their part in providing rights of way, roads, utilities and the like. Our government now needs to fulfill their obligatory part of the project and bring it to completion as quickly as possible.

We believe the Corps could adequately use 500 million dollars each year for maintenance and construction within the MR&T. We realize there are budgetary restraints this year and respectively request Congress to approve adequate funding for maintenance and construction for the MR&T. The MR&T improvements I have talked about thus far have been the benefits for flood control. However, these benefits are also realized during the low flow event currently being experienced on the Mississippi River. The hydraulic improvements that allowed a record flood event to pass at a 0.8 foot lower elevation in 2011 than in 1937, also allow barge traffic and a near record low event experienced in 2012. If it were not for the MR&T system improvements barge traffic during the 2012 low water event would have been nonexistent.

We thank you again for your understanding of our needs and the importance of the MR&T system by not allowing FEMA to charge mandatory flood insurance as defined below:

SEC. 107. MANDATORY COVERAGE AREAS.

(a) Special Flood Hazard Areas- Not later than 90 days after the date of enactment of this Act, the Director shall issue final regulations establishing a revised definition of areas of special flood hazards for purposes of the National Flood Insurance Program.

(b) Residual Risk Areas- The regulations required by subsection (a) shall--

(1) include any area previously identified by the Director as an area having special flood hazards under section 102 of the Flood Disaster Protection Act of 1973 (42 U.S.C. 4012a); and

(2) require the expansion of areas of special flood hazards to include areas of residual risk, including areas that are located behind levees, dams, and other man-made structures.

(c) Mandatory Participation in National Flood Insurance Program-

(1) IN GENERAL- Any area described in subsection (b) shall be subject to the mandatory purchase requirements of sections 102 and 202 of the Flood Disaster Protection Act of 1973 (42 U.S.C. 4012a, 4106).

(2) LIMITATION- The mandatory purchase requirement under paragraph (1) shall have no force or effect until the mapping of all residual risk areas in the United States that the Director determines essential in order to administer the National Flood Insurance Program, as required under section 19, are in the maintenance phase.

Thank you for understanding the tremendous negative impact this piece of legislation would have had on the entire Mississippi River Valley. Billions of dollars already spent on flood control structures would be negated because of needless MANDATORY flood insurance premiums. Please remember the 1928 flood control act recognizes the investment of the local people by initial construction and taxation of themselves for maintenance. This investment was over 200 million dollars in 1928 and totals more than 17 billion dollars today. Making the total investment in the MR&T over 30 billion dollars. Because of this, it is still necessary to discuss the new policies being implemented by the Federal Emergency Management Agency in their Map Modernization Program.

The policy creates a New Zone "X" (shaded) designated area. This new designation shows all areas behind a levee as an unsafe place to live and recommends, among other things, an evacuation plan and flood insurance.

This designation renders all work done by local and federal organizations for the last 100 years, useless. Even if our levees are Federal Levees and have received an outstanding maintenance award through the U.S. Army Corps of Engineers inspection process, this Zone "X" (shaded) designation will be placed on all new flood maps. This will needlessly destroy economic development for over 22,000,000 acres of land in this country. Please put a stop to this new Zone "X" (shaded) designation. Please do not use a "one size fits all" approach and place false fear in the minds of people living behind levees. **THE INSURANCE INDUSTRY WOULD LOVE NOTHING MORE THAN THE ABILITY TO COLLECT FLOOD INSURANCE PREMIUMS WITHOUT THE POSSIBILITY OF PAYING CLAIMS BECAUSE OF THE HARD WORK OF THE U.S. ARMY CORPS OF ENGINEERS AND LOCAL LEVEE AND DRAINAGE DISTRICTS ACROSS THIS COUNTRY.**

With the tragedy that struck the Gulf Coast and East Coast, we must now turn our attention to the future and attempt to make certain that at least the flooding does not take place again. We can prevent that; the Dutch, the English and the Italian have done it and so can we if we treat flood control as something that we must do. The citizens of this great nation deserve it.

There are four anomalies of nature that cause death and destruction to our nation. They are (1) earthquakes, (2) hurricanes, (3) tornadoes and (4) floods. The first three we can do very little if anything about except to prepare for the worst. We can build protection against floods, against the "maximum probable flood", one that has an "improbable occurrence but nevertheless a remotely possible one".

In order to provide such protection we believe that three things must be done.

First, the environmental laws, or at least the way they are interpreted for flood control projects, must be changed or we stand to lose more lives and have another absolute environmental catastrophe such as the one we have witnessed in New Orleans and along the Gulf Coast. Second, cancel all cost-sharing for flood control projects unless we do intend to only protect those that can afford it and ignore those that can not. Third, relax the requirements for the benefit to cost ratio for flood control projects for one reason, it is impossible to assign a dollar value to a human life. It is our opinion that these things must be done, for without flood control, nothing else really matters. I close with a simple reminder. The MR&T system is not complete and therefore will not pass the Project Design Flood! Thank you for your leadership and the resulting 100's of billions of dollars averted because you supported and funded the greatest civil works project on the planet ... the MR&T!

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