ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR 2017

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

HOUSE OF REPRESENTATIVES

ONE HUNDRED FOURTEENTH CONGRESS

SECOND SESSION

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PART 9

WITNESSES

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Kumi Premathilake
Senior Vice President, Advanced Metering Infrastructure, Aclara

House Appropriations Committee
Subcommittee on Energy and Water Development

Fiscal Year 2017 Department of Energy Funding

March 11, 2016

As a leading provider of smart infrastructure technologies to electric, gas and water utilities, Aclara Technologies, LLC respectfully urges your support for funding to advance methane leak detection technologies as well as other technologies aimed at improving the performance, efficiency, and safety of our nation's energy and water distribution infrastructure in the Fiscal Year (FY) 2017 Energy and Water Development Appropriations bill. We thank you for this opportunity to express our support for this funding and appreciate your consideration.

Aclara Technologies, LLC ("Aclara") provides smart infrastructure technologies to electric, gas and water utilities, with offerings in advanced metering, methane sensing, device networking and communications, data management, analytics, and customer service. Over 700 utilities in nine countries rely on proven Aclara solutions to monitor their distribution networks.

Aclara offers its strong support for the advancement of technologies that can improve our nation's energy and water distribution networks by providing enhanced monitoring, detection, and control capabilities. These technologies are an important and cost-effective way to increase reliability, efficiency, and safety of our ageing infrastructure. Supporting the advancement of these technologies will be crucial as the country's energy and water distribution networks continue to age and as the risks for utilities and network operators rise.

Of particular importance are technologies for detecting methane leaks along natural gas distribution networks. The U.S. currently has 2.4 million miles of natural gas pipeline infrastructure and approximately 400 storage fields, which combined carry around 25% of the total energy consumed in the U.S. The low cost and relative abundance of natural gas is driving the aggressive expansion of new pipeline infrastructure. It is also causing increased use of existing infrastructure, putting pressure on an ageing system. As our reliance on natural gas continues to expand, so will the pressures on our natural gas infrastructure. Advanced leak detection technologies are crucial to curbing methane emissions from natural gas pipelines and storage fields and decreasing the risk of major gas leaks and accidents.

Take, for example, the Aliso Canyon methane leak in California, which lasted over four months and released approximately 97,100 metric tons of methane into the atmosphere (more than the estimated *total* annual emissions from the entire U.S. pipeline infrastructure). Leaks like the one in Aliso Canyon demonstrate that the magnitude of risk faced by the natural gas industry is great,

and that even more substantial risks exist for citizens living in the surrounding area and the environment.

The key to reducing methane leakage – and associated environmental, safety, and economic impacts - from natural gas distribution networks is being able to locate and close leaks quickly and effectively. While traditional infrastructure replacements, upgrades, and periodic monitoring technologies do not allow utilities to do this, innovative technology is being developed that does.

Some of this new technology is already on the market. For example, Aclara offers several technology-based solutions and pipeline safety enhancements for natural gas transmission, storage, and distribution companies. Aclara's technologies enable continuous remote monitoring via infrared point sensing with automatic reads and near real-time alarms, which allow utilities to proactively identify potential issue areas in their network and significantly reduces the chances of a small leak and/or disturbance turning into a catastrophic burn hole. The key to this technology is a focus on early detection, which is the most essential aspect of effective, proactive risk management and safety practices. The technology is also very cost-effective, as it can be easily fitted to existing AMI networks and the data it generates can be transmitted by existing utility communications networks, thus eliminating the high operational costs of data communication charges with cellular modems or other cost intensive communication technologies.

While Aclara's infrared point sensing technologies represent a clear improvement over traditional monitoring technologies, even more advanced technologies could provide even greater benefits. For example, acoustic leak detection – which is currently used to detect water leaks – could prove to be an important complementary tool in methane leak detection. In general, acoustic monitoring techniques use ultrasonic sensors to detect leaks based on changes in the background noise pattern. Most gas leaks produce a broad range of sounds that span from the audible to the ultrasonic range (25 kHz to 10 MHz). Ultrasound generates high energy, short wave signals that are directional and localized. Ultrasonic gas leak detectors respond to deviations from this normal or baseline condition to produce an alarm. The advantages of acoustic leak detection include instant detection of a leak and increased accuracy in pinpointing its location. Acoustic leak detection is also unaffected by changes in wind direction or gas dilution.

Acoustic methane leak detection is one of the methane leakage technologies that deserve additional study for their tremendous promise, but more field research needs to be done before new technologies can advance to commercial viability. For this reason, Aclara respectfully urges Congress to fund a new Methane Leakage Detection Technology Pilot to be carried out by the U.S. Department of Energy (DOE) Fuel Supply Impact Mitigation program (formerly called "Natural Gas Technologies"):

$10 million Methane Leakage Technology Detection Pilot. DOE will partner with one or more leading smart technology companies to undertake 1-3 pilots to test new methane leakage technologies. Acoustic, Infrared, Laser, Spectrophotometry, and/or other methane detection technologies will be investigated as commercially viable solutions for methane detection. The pilots will determine if new and innovative sensors can play a role in pinpointing and prioritizing

infrastructure replacements. The $10 million would be in addition (plus up) to the $ 26.5 million provided to the Fuel Supply Impact Mitigation program in the President's FY17 budget.

Aclara believes that technologies that improve the performance, efficiency, and safety of the country's energy and water distribution networks are essential to our economic growth, health and safety, and overall resiliency. This is particularly true of technologies that quickly, accurately, and reliably detect methane leaks. Again, thank you for providing this opportunity to submit testimony. We would also appreciate the opportunity to brief you or your staff on the status of these technologies and how additional research can help their advancement. We look forward to working with you.

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March 3, 2016

Testimony of Jennifer Kefer, Executive Director, Alliance for Industrial Efficiency

On behalf of the Alliance for Industrial Efficiency (the Alliance), I am writing in support of providing full funding in Fiscal Year (FY) 2017 for combined heat and power (CHP) and waste heat to power (WHP) programs administered by the U.S. Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE), as articulated in the President's budget. The Alliance is a diverse coalition of representatives from the business, environmental, labor and contractor communities. We are committed to enhancing manufacturing competitiveness and reducing emissions through industrial energy efficiency, particularly through the use of clean and efficient power generating systems, such as CHP and WHP.

CHP and WHP offers reduced energy consumption, lowered emissions, and improved grid reliability. By generating both heat and electricity from a single fuel source, CHP dramatically lowers emissions and increases overall fuel efficiency – allowing utilities and companies to effectively "get more with less." CHP can operate using more than 70 percent of fuel inputs. As a result, CHP can produce electricity with roughly one-quarter the emissions of an existing coal power plant. WHP can produce additional electricity from existing industrial processes with no incremental fuel or emissions. In these ways, EERE's investments in CHP and WHP deployment further the Department's broader goal of making the use of fossil fuels more energy efficient. CHP also enhances electric reliability; because CHP systems produce electricity at the point of use, the losses associated with transmission and distribution (T&D) can be eliminated. This reduces energy use and defers or eliminates the need for costly new T&D investment. Moreover, since CHP systems can operate independent of the grid, they can continue to provide heat and electricity during extreme weather events, which may compromise the grid.

The FY2017 EERE budget includes important provisions that advance CHP and WHP. In particular, the budget request includes adequate funding for the Advanced Manufacturing Office to support the President's goal of 40 gigawatts of new CHP capacity by 2020, as provided by Executive Order 13264, as well as the Presidential Better Building's initiative to help American commercial and industrial buildings become at least 20 percent more energy efficient over the next 10 years. In total, the Industrial Technical Assistance program's FY2017 request is $29.5M, which includes $10 million in ongoing support for the CHP Technical Assistance Partnerships ("TAPs") to help states increase CHP and WHP deployment.

We urge the House Appropriations Committee and Energy and Water Subcommittee to adopt Advanced Manufacturing funding levels for FY2017 consistent with the President's budget request. Funding at the level requested would provide U.S. DOE with the resources it needs to further strengthen CHP and WHP initiatives.

Thank you for your consideration.

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TESTIMONY OF KATERI CALLAHAN
PRESIDENT OF THE ALLIANCE TO SAVE ENERGY
BEFORE THE
U.S. HOUSE OF REPRESENTATIVES COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT, AND RELATED AGENCIES
IN SUPPORT OF
FISCAL YEAR 2017 FUNDING FOR THE U.S. DEPARTMENT OF ENERGY OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY FUNDING

MARCH 15, 2016

On behalf of the undersigned organizations, please accept this testimony in support of funding in Fiscal Year (FY) 2017 for energy efficiency programs administered by the U.S. Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE). These funding levels are generally consistent with the budget proposal submitted on February 9 by President Obama and previous requests.

Energy efficiency is our nation's most abundant energy resource. Without the gains in energy efficiency made since 1973, the U.S. economy would today require 60% more energy than we currently consume. Savings from energy efficiency over this 43-year period have reduced our national energy bill by about $700 billion. The importance of U.S DOE in research, technical assistance, and market integration efforts that have driven gains in energy efficiency cannot be overstated. For example, support for EERE core programs has driven meaningful results across the spectrum from more than $539 billion in consumer savings from energy efficiency standards to a 94% decline in the cost of light-emitting diode (LED) lighting since 2008. U.S. DOE EERE programs have provided an exceptional value to American consumers and businesses, yielding benefits that far outweigh the relatively nominal outlays appropriated by Congress. We therefore respectfully request FY2017 funding for the following U.S. DOE programs, as summarized below.

Building Technologies Office

- We respectfully request $289 million for the Building Technologies Office (BTO), which develops critical technologies, tools, and solutions that help U.S. consumers and businesses achieve peak efficiency performance in their buildings across all sectors of our economy.
    - Within this account, we respectfully request funding allocations for the following priorities:
        - $169 million for the Emerging Technologies Program,
        - $54 million for the Equipment and Building Standards Program,
        - $28 million for Commercial Building Integration, and
        - $23 million for Residential Building Integration.

Advanced Manufacturing Office

- We respectfully request $261 million for the Advanced Manufacturing Office to enable the important research, development, demonstration, and deployment of industrial

efficiency and clean energy manufacturing technologies. We support funding of Clean Energy Manufacturing Innovation Institutes and the deployment of energy efficient manufacturing technologies. This is a key part of the President's vision for a larger multi-agency National Network for Manufacturing Innovation (NNMI).

Federal Energy Management Program

- We respectfully request $43 million for the Federal Energy Management Program to provide policy and project expertise to all federal agencies. This support is critical to help ensure compliance with energy management goals enacted by Congress or authorized by executive order.

Weatherization and Intergovernmental Activities

- We respectfully request $326 million for Weatherization and Intergovernmental Activities. These programs support the deployment of energy efficiency and clean energy technologies and practices in partnership with state, local, and territorial governments.
    - Within this account, we respectfully request funding allocations for the following priorities:
        - $230 million for the Weatherization Assistance Program,
        - $70 million for the State Energy Program, and
        - $26 million for the Cities, Counties, and Communities Energy Program.

State Energy Productivity Innovation Challenge

- We respectfully request $175 million for the State Energy Productivity Innovation Challenge, which provides awards to states to promote the goal of doubling the productivity of electric and thermal energy. This program has been known in past fiscal years as the "Race to the Top" initiative. (This program was not included in the President's FY2017 Budget Request.)

Vehicle Technologies Program

- We respectfully request $468.5 million for the Vehicle Technology Program, which contributes to advancements in battery storage, lightweight materials, and freight truck efficiency.

The FY2017 budget request from the President contains a new and laudable commitment to new funding and initiatives for a wide range of research, development, and deployment activities. "Mission Innovation" is significant in every way and will require new funding that will encourage and incentivize innovation across the U.S. clean energy economy. We support this program so long as funding does not come at the expense of the core EERE program. We support the President's request with respect to Advanced Research Projects Agency-Energy (ARPA-E), grid modernization, and other EERE programs.

Looking forward, we urge you to oppose the inclusion of any amendment to FY 2017 appropriations bills that would undermine or prevent the U.S. DOE from executing on the laudable and important programs that deliver far reaching benefits to consumers and businesses.

We urge the Subcommittee to provide robust funding to these important energy efficiency programs within U.S. DOE in FY2017.

We urge the Subcommittee to adopt funding levels for FY2017 consistent with the President's budget request. Funding at the levels requested would provide U.S. DOE with the resources it needs to accomplish its mission, help the federal government meet its goals, and implement initiatives for the benefit of consumers and businesses across all sectors of our economy.

Submitted on behalf of:

Alliance to Save Energy
American Council for an Energy-Efficient Economy
American Institute of Architects
ASHRAE
The Dow Chemical Company
EcoThermalFilters
Efficiency First
Environmental and Energy Study Institute
Green Business Certification, Inc.
Home Performance Coalition
Institute for Market Transformation
International Association of Lighting Designers
National Association of Energy Service Companies
National Association of State Energy Officials
National Insulation Association
Natural Resources Defense Council
O'Gara Goett Partners LCC
Polyisocyanurate Insulation Manufacturers Association
The Stella Group, Ltd.
U.S. Green Building Council
Vermont Energy Investment Corporation

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House Appropriations Subcommittee on Energy & Water Development, and Related Agencies

Testimony on the U. S. Department of Energy's Fiscal Year 2017 Appropriations

March 15, 2016

Submitted by The American Chemical Society

The American Chemical Society (ACS) would like to thank Chairman Michael Simpson and Ranking Member Marcy Kaptur for the opportunity to submit testimony for the record on the Energy and Water Development Appropriations bill for fiscal year 2017. For FY 2017, ACS requests the Department of Energy Office of Science be fully funded at the Administration request of $5.572 billion. ACS also requests that the Subcommittee fund the Basic Energy Sciences program and Biological and Environmental Research program at their full requested amounts.

ACS is a non-profit scientific and educational organization, chartered by Congress, representing more than 158,000 individual chemical scientists and engineers. The world's largest scientific society, ACS advances the chemical enterprise, increases public understanding of chemistry, and brings its expertise to bear on state and national matters.

ACS Budget Recommendations

Current federal efforts to advance energy efficiency, production, and new energy sources while reducing air pollution and other environmental impacts will demand increased investment in long-term energy research. By supporting people, research, and world-class science and engineering facilities, the Department of Energy's Office of Science expands the frontiers of science in areas critical to DOE's energy, environment, and national security missions.

The President's Budget request represents leadership to ensure American competitiveness and innovation by providing the largest investment in DOE Office of Science in over two decades. Many in Congress have joined with the President in calling for expanded investment in basic physical science research. The President's request for $5.572 billion is essential to ensuring the strength of our innovation economy.

The Office of Science fosters the new discoveries and technical talent that will continue to be essential to advances in coal, hydrogen, biomass, genomics, and many other technology areas. Additional funds should be directed to increase the number of grants, especially in core energy

programs, and to improve research facilities. The Office is the primary source of federal support in many research areas essential to our energy security and economy, such as catalysis, carbon cycle research, photovoltaics, combustion, and advanced computing. Increased investment is also important given the declining private support for long-term energy research.

Within the Office of Science, ACS particularly supports the Basic Energy Sciences and Biological and Environmental Research programs. As the cornerstone of the Office, the *Basic Energy Sciences (BES)* program supports an array of long-term basic research to improve energy production and use and reduce the environmental impact of those activities. The BES program manages almost all of DOE's scientific user facilities, and provides leading support for nanotechnology and advanced computing research—two priority research areas that will have important implications for energy efficiency and security. The *Biological and Environmental Research (BER)* program advances fundamental understanding in fields such as waste processing, bioremediation, and atmospheric chemistry to better understand potential long-term health and environmental effects of energy production and use and identify opportunities to prevent pollution. Progress in these fields is also needed to develop and advance new, effective, and efficient processes for the remediation and restoration of DOE weapons production sites. ACS supports a strong role for DOE in federal efforts to advance pollution prevention and climate change research.

Written Testimony
American Geosciences Institute

Testimony Submitted by
American Geosciences Institute

P. Patrick Leahy, Executive Director

To the United States House of Representatives
Committee on Appropriations
Subcommittee on Energy and Water Development, and Related Agencies
Regarding the Department of Energy

March 11, 2016

Thank you for this opportunity to provide the perspective of the American Geosciences Institute (AGI) on fiscal year (FY) 2017 appropriations for programs within the Subcommittee's jurisdiction. Department of Energy (DOE) investments in geoscience-related research and development (R&D) will help develop and sustain energy resources to support economic growth, national security, and resilient communities.

AGI supports proposed increases to the Geothermal Energy Technologies and Water Power Programs, renewed funding of the Critical Materials Hub in the Office of Energy Efficiency and Renewable Energy, and increases to the Subsurface Technology and Engineering RD&D and Energy-Water Nexus crosscuts. We respectfully ask the Committee to reject the proposed cuts to the Fuel Supply Impact Mitigation program in Fossil Energy. AGI supports robust funding for science at DOE and the President's request of $5.67 billion for the Office of Science.

To create an effective clean energy future, we urge DOE to work closely with the U.S. Geological Survey, universities, and others to ensure that innovation in energy technologies is compatible with the Earth system where the technologies will be deployed. The Mission Innovation initiative may offer opportunities for this cross-system integration.

AGI is a nonprofit federation of 51 geoscientific and professional associations that represent approximately 250,000 geoscientists who work in industry, academia, and government. Founded in 1948, AGI provides information services to geoscientists, serves as a voice of 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 natural hazards, and the health of the environment.

DOE Office of Energy Efficiency and Renewable Energy

Geothermal Technologies Program: Major investments in the Frontier Observatory for Research in Geothermal Energy (FORGE) and the Hydrothermal subprogram should lead to significant advances and private-sector engagement in these promising clean energy sectors.

Water Power Program: Low-impact water power projects can be a resilient, clean source of power; onshore projects at various scales and marine hydrokinetic energy development show strong potential but need increased R&D to become ready for commercial adoption.

AGI supports the President's request for $99.5 million for the Geothermal Technologies Program and $80 million for the Water Power Program to diversify our energy portfolio.

Advanced Manufacturing Technologies: New materials are a foundation for innovative energy development. The Advanced Manufacturing Technologies program focuses on one section of the lifecycle of materials for the energy sector: developing new materials and technologies.

AGI is a member of the Minerals Science and Information Coalition, which supports mineral functions in the federal government. The Critical Materials Hub, a consortium led by Ames National Laboratory, is carrying out important and timely research that should increase resilience to possible disruptions in the supply chains of elements that are critical to the energy sector. **AGI strongly supports a new phase of funding of at least $20 million to extend the nationally significant work at the Critical Materials Hub.**

We urge DOE to take a comprehensive and holistic view of the lifecycle of materials. Studies should integrate knowledge from the geosciences, from sourcing raw materials to disposal of used products, with the existing technological expertise in DOE to produce a full lifecycle analysis of materials critical to the energy sector.

Crosscutting Initiatives

Subsurface Technology and Engineering RD&D crosscut (SubTER): The Subsurface Technology and Engineering RD&D crosscut integrates research, development, and demonstration on shared issues associated with the Earth's subsurface across the agency. It is encouraging to see a collaborative effort to minimize duplication and maximize synergies across several DOE offices. We strongly suggest that DOE expand this effort to include communication and, to the extent possible, collaboration with the U.S. Geological Survey, which has unique expertise in and responsibility for studying the Earth's subsurface.

Energy-Water Nexus: Demand for water and energy, which enable our existence, is rising. Investment in the Energy-Water Nexus crosscut will provide vital information for decision makers and help develop resilient energy-water systems. We again suggest that the U.S. Geological Survey and other entities be included in the process.

AGI asks the Committee to support these crosscutting DOE initiatives, and we respectfully suggest that the Committee encourage interagency collaboration in order to ensure the most efficient and effective use of federal resources in the national interest. The proposed Mission

Integration initiative may open pathways for integrated studies of the intimately linked Earth and energy systems.

DOE Office of Fossil Energy Research and Development

Fossil Energy R&D: We respectfully request that the committee support increased research on natural gas, unconventional fossil fuel, carbon capture and geologic carbon storage, and hydrates. According to Energy Information Administration forecasts, our energy mix will be unchanged in 2040 with 80 percent of our energy coming from fossil fuels; developing more efficient technologies and minimizing the impacts of fossil fuels will benefit the economy, the environment, and human health and wellbeing. The renamed Fuel Supply Impact Mitigation program is working, in coordination with the U.S. Geological Survey and other agencies, to minimize emissions, water usage, and other impacts from the development of unconventional oil and gas resources, and to evaluate the nation's gas hydrate resources.

AGI supports investment in fossil fuel R&D that would enable the nation to reap the greatest benefit, while causing the least associated harm, from ongoing fossil fuel production and use, and requests that funding for the Fuel Supply Impact Mitigation program be maintained at the FY 2016 level of $43 million.

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. The Biological and Environmental Research Program carries out important work in atmospheric modeling and the linkages between Earth, biological, and human systems; the Chemical Sciences, Geosciences, and Biosciences Division of the Basic Energy Sciences program helps elucidate the geochemical and geophysical characteristics of the Earth.

The Workforce Development for Teachers and Scientists program actively engages those who will become and who train the workforce of the future. This program supports a diverse and talented pool of students and scientists; it merits robust funding.

AGI asks the Committee to support the President's request of $5.67 billion for the Office of Science.

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.

THE AMERICAN INDIAN HIGHER EDUCATION CONSORTIUM

SUBMITTED TO THE U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT, AND RELATED AGENCIES
DEPARTMENT OF ENERGY – NATIONAL NUCLEAR SECURITY ADMINISTRATION

March 15, 2016

I. REQUEST SUMMARY

On behalf of the nation's Tribal Colleges and Universities (TCUs) that collectively are the American Indian Higher Education Consortium (AIHEC), thank you for this opportunity to present the TCUs' Fiscal Year 2017 (FY 2017) appropriations request with regard to the Department of Energy, National Nuclear Security Administration (NNSA) Minority Serving Institutions Partnership Program (MSIPP). New funds were added to the program in last year's budget, but because the intent for the use of those funds to launch a TCU Initiative within the NNSA-MSIPP was not clearly enough articulated, the funds were absorbed into the existing NNSA-MSIPP program. In the end, a modest amount of funding was identified to implement the initial phase of an important TCU Initiative, engaging 5 TCUs in the project. We ask that report language be included in the FY 2017 Energy and Water Development, and Related Agencies, Appropriations bill designating $5 million of the funds appropriated for the Department of Energy, National Nuclear Security Administration (NNSA) Minority Serving Institutions Partnership Program (MSIPP), specifically for the Tribal Colleges and Universities Initiative.

This initiative is designed to support a primary focus of the MSIPP, which includes advancing the TCUs' capacity for engaging in collaborative research projects throughout the NNSA complex, and helping to meet the nation's STEM workforce needs.

II. NNSA-MSIPP TRIBAL COLLEGES AND UNIVERSITIES INITIATIVE

As noted above, new funds included in last year's budget were intended to support a Tribal Colleges and Universities initiative designed to educate, train, and develop Native researchers, engineers, and technicians to expand and diversify the nation's STEM workforce in important technology growth areas. The fully-implemented project will focus on capacity building at TCUs in these growth areas and on facilitating research partnerships with NNSA's National Laboratories and their industry partners. In addition to furthering the science mission of the U.S. Department of Energy, activities supported through this program will encourage Native students to pursue science and technology careers resulting in a sustainable career pipeline for American Indian and Alaska Native students in science and technology fields that are emerging as key drivers of the U.S. and global economies.

III. BACKGROUND: TCU SHOESTRING BUDGETS- "DOING SO MUCH WITH SO LITTLE"

Tribal Colleges and Universities are an essential component of American Indian/Alaska Natives (AI/ANs) education. Currently, 37 TCUs operate more than 75 campuses and sites in 16 states, within whose geographic boundaries 80 percent of all American Indian reservations and federal Indian trust land lie. They serve students from well over 250 federally recognized tribes, more than 70 percent of whom receive federal financial aid. In total, the TCUs annually serve over 100,000 AIs/ANs through a wide variety of academic and community-based programs. TCUs are public institutions accredited by independent, regional accreditation agencies and like all U.S. institutions of higher education must periodically undergo stringent performance reviews to retain their accreditation status. Each TCU is committed to improving the lives of its students through higher education and to moving AI/ANs toward self-sufficiency. To do this,

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TCUs must fulfill additional roles within their respective reservation communities, functioning as community centers, libraries, tribal archives, career and business centers, economic development centers, public meeting places, and child and elder care centers.

The federal government, despite its direct trust responsibility and binding treaty obligations, has never fully funded the TCUs' institutional operating budgets, authorized under the Tribally Controlled Colleges and Universities Assistance Act of 1978. In fact, after over 35 years, the TCU operating support remains well below the level authorized for their day-to-day institutional operations. TCU budgets are at a further disadvantage because these colleges receive operations funding based on only a percentage of their enrolled students. Almost every other U.S. institution of higher education receives institutional operations funding based on its entire student body. However, approximately 15 percent of the TCUs' collective enrollments are non-Indian students living in the local community. TCUs receive federal funding based only on Indian students, defined in statute as members of a federally recognized tribe or the biological children of an enrolled tribal member. While many TCUs do seek funding from their respective state legislatures for their non-Indian, state-resident students (oftentimes referred to as "non-beneficiary" students) successes have been inconsistent at best. Yet, if a TCU's non-beneficiary students attended any other public institution in the state, the state would provide the college with ongoing funding toward its day-to-day operations. Given their locations, often hundreds of miles from another postsecondary institution, TCUs are open to all students, Indian and non-Indian, believing that education in general, and postsecondary education in particular is a catalyst to a better economic future for their local and regional communities.

IV. FURTHER JUSTIFICATIONS

Since 1973, the American Indian Higher Education Consortium (AIHEC) has been the collective spirit and voice of the nation's Tribal Colleges and Universities (TCUs), advocating on behalf of tribally or federally chartered institutions of higher education. AIHEC's mission is to nurture, advocate, and protect American Indian history, culture, art and language, and the legal and human rights of American Indian people to their own sense of identity and heritage. Our vision statement - *Strengthening sovereign nations through excellence in Tribal higher education* - illustrates our strong focus on Tribal Nation building.

To achieve this vision, AIHEC is continually seeking new avenues of support to grow the country's Native workforce and to create jobs in Indian Country. TCUs are the leaders in preparing American Indian/Alaska Native nurses, hundreds of teachers, and other professionals in high-demand fields, including agriculture and natural resources management, human services, IT technicians, and build tradesmen. However, training workers where opportunities for employment are extremely limited cannot address the entrenched poverty that plagues Indian communities.

Using the TCUs as the foundation, AIHEC is implementing a long-term systemic plan for transitioning Native communities' economies from one that perpetuates the cycle of unemployment, dependency, and poverty to economically self-sufficient communities. Working with new and emerging manufacturing technologies and methods, and with seed funding from the U.S. Department of Energy's National Nuclear Security Administration (NNSA), we have established an Advanced Manufacturing program involving a pilot cohort of five TCUs. Each college has established a basic advanced manufacturing facility, is involved in developing a joint training and education program, and identified research and development projects involving energy system and related technologies which they are pursuing with private sector and federal agency partners. This program will prepare a well-trained Native workforce in advanced manufacturing and

create economic and employment opportunities within Tribal communities through design and manufacture of products that are responsive to needs and opportunities within these targeted technology areas. The project envisions bringing the "maker movement" to Indian Country by providing American Indian/Alaska Native young people with technical skills, as well as the opportunity to use those skills to respond to emerging opportunities in key technology areas. We envision Tribes, Tribal Colleges, and investment partners working together to establish a manufacturing hub in Indian Country for products and technologies that are designed, developed, and made by Native people. While the $5 million requested from the DOE will focus on DOE STEM strategic goals more broadly, it will be critical to this initiative, ensuring that the participating Tribal Colleges have the facilities, dedicated personnel, and National Laboratory partners necessary for meeting both their training and education and research and development goals. Most important, these funds will help ensure that the TCUs develop the capacity to generate business activity that creates revenue necessary to grow and expand the program, and create jobs.

The new TCU Initiative is helping to advance some very promising and exciting projects in the area of advanced manufacturing. Two TCUs are providing models for the other colleges now participating and those eager to be included as the initiative expands. Bay Mills Community College (BMCC) in Brimley, MI operates the Great Lakes Composite Institute, a wholly-owned subsidiary of the college that functions as a Tier II/Tier III manufacturing supplier. It has established a technical leadership position as a supplier of composite materials and products focusing on thermoplastic fiber reinforced polymeric innovations and next generation thermoplastic fiber reinforced products. Industry partners include the Department of Defense military tank command (TARDEC), Ford Motor Company, and the Chrysler Corporation. The Center for Digital Technology at Navajo Technical University (NTU) in Crownpoint, NM has established a program that involves three dimensional modeling and manufacturing. They are currently focusing on additive metal manufacturing, "lightweighting", and metrology with partners from Sandia and Lawrence Livermore National Laboratories, NASA, and regional New Mexico and Arizona companies. Both BMCC and NTU are providing leadership and models for how TCUs can successfully participate in an advanced technology-supported economic growth area while providing students hands-on training and career opportunities.

The TCUs are a very sound investment of federal funds. A recent independent, economic impact study *revealed that TCUs create lasting value from multiple perspectives: students, society, and taxpayers.* TCUs elevate their students' lifetime incomes, and this in turn benefits society as a whole, by increasing the region's economy and generating a wide array of savings through improved lifestyles. The increased employment benefits taxpayers through increased tax receipts and a reduction in the need for welfare and unemployment benefits. In fact for every dollar spent, the life time income of students more than quadruples; society gains over five times the investment, in added income and social savings; and the taxpayers see a return of almost two and a half times the investment.

V. APPROPRIATIONS LANGUAGE REQUEST FOR FY 2017

We ask that the Subcommittee include report language designating that of the funds appropriated for the National Nuclear Security Administration (NNSA)-Minority Serving Institutions (MSI) Program, $5 million be designated for the Tribal College Initiative, so that we might begin to truly benefit from the intended program that could set TCUs on a path to further the opportunities they can offer their students and reservation communities.

VI. CONCLUSION

Struggling economies are endemic in Indian Country. We ask that Congress join us in bringing Tribal nations into the evolving global manufacturing community, transforming Tribal economies while addressing national energy technology challenges. AIHEC Member institutions/Tribal Colleges and Universities provide quality higher education opportunities to many thousands of American Indians and Alaska Natives and other reservation residents, as well as essential community programs and services to those who might otherwise not have access to such possibilities. As noted earlier, the modest federal investment that has been made in TCUs has paid great dividends in terms of employment, education, and economic development. Continuation of this investment and expanding it through Department of Energy/NNSA partnerships makes sound fiscal, as well as moral sense.

We greatly appreciate your past and continued support of the nation's Tribal Colleges and Universities and your thoughtful consideration of our FY 2017 appropriations requests.

Testimony by Eugene S. Grecheck
President, American Nuclear Society
House Appropriations Subcommittee on Energy and Water Development
On the FY 2017 Energy and Water Development Appropriations Bill
March 15, 2016

Chairman Simpson, 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 2017 appropriations for the U.S. Department of Energy (DOE) 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, 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 science and energy technology capabilities, both from an energy supply and national security perspective. While we recognize that U.S. 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 U.S.

Overall, 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. In general, we are supportive of the administration's request; however we have several specific areas of concern and/or emphasis that are delineated below:

DOE/NRC Integrated University Program (IUP)

Recommendation: $15 million in IUP funding for the Nuclear Regulatory Commission and $5 million for DOE-Office of Nuclear Energy

We are extremely grateful to the subcommittee for its continued support of the Integrated University Program. The IUP continues to provide critical support for university-based programs in nuclear engineering and related disciplines through scholarships, fellowships, and young faculty awards.

The federal government, through science-centric agencies such as the National Science Foundation, has consistently provided funding for these activities in other scientific and engineering disciplines. However, NSF has consistently demonstrated an unwillingness

to provide support for nuclear engineering and related fields, thus necessitating the dedicated stream of funding that the IUP provides.

Aerospace engineering is perhaps the most analogous discipline to compare when considering the appropriate federal stewardship for the nuclear education. At the graduate level, both nuclear and aerospace engineering programs at U.S. institutions of higher education are extremely resource-intensive academic efforts. For aerospace, federal government provides roughly $1.8 million in support for each doctorate awarded. By comparison, under the current funding structure, nuclear engineering academic programs receive roughly $700,000 per doctorate awarded.

Each year, OMB proposes the termination of the IUP, justifying their decision with some vague indication that NSF should provide support. Most recently, the IUP has been targeted as part of a larger STEM program consolidation effort. Given its history, we remain convinced that termination of the program would result in significant harm to the US nuclear engineering education enterprise.

DOE; Office of Nuclear Energy; Advanced Reactor Industry Partnerships

Recommendation: Fund DOE/NE Advanced Reactor Concepts program at the FY 2016 level of $141 million.

In January, DOE competitively awarded up to $80 million for two industry cost-shared projects to develop advanced non-light water reactor systems. While the DOE awards provided $12.5 million in FY 2016 funding as per congressional direction, the remainder of the awards are subject to future appropriations. For FY 2017, DOE has proposed a $33 million reduction in funding for the Advanced Reactor Technologies program. Most, if not all, of the proposed cut would be derived from withholding funding for these recent awards. This reduction seems ridiculous on its face and should be rectified by the Subcommittee.

NRC; Advanced Reactor Licensing

Recommendation: $5 million for the NRC Office of New Reactors to support advanced reactor licensing activities.

The Administration's FY 2017 budget request for NRC includes $5 million to "accelerate research and development activities to prepare for effective and efficient reviews of advanced reactor technologies. This would include licensing infrastructure revisions, technical preparation, and outreach to stakeholders." Given the heightened interest among the nuclear industry and venture capital community in developing non-light water reactor systems and the need for NRC to adapt its licensing framework, ANS strongly supports this request.

DOE; Office of Science; Office of Biological and Environmental Research; Radiological Sciences Research

Recommendation: Provide $2 million to support continuation of Radiological Sciences activities.

In its budget request, the administration has proposed terminating its Radiological Science activities in FY 2017. BER has been the principal federal sponsor for research related to the biological and health effects of low-dose radiation since the beginning of the 2000s. Current federal radiation standards are based on the 60-year-old "Linear No Threshold Theory" (LNT) which posits a linear relationship between exposure to ionizing radiation and cancer risk. Simply put, the LNT theory indicates that populations receiving a higher annual dose of radiation from either natural or man-made sources (airline pilots, residents of high-altitude areas) would have a higher incidence of cancer and cancer-related deaths. However, nearly 60 years of research has failed to identify any meaningful epidemiological evidence of increased cancer risk from low-dose radiation. Indeed, there are some studies at both the cellular and population level which suggest that low-level doses of radiation may have beneficial health effects.

ANS believes it is critically important for DOE Office of Science to continue funding radiological exposure research and provide support for the Million Worker Study being conducted by the National Council on Radiation Protection (NCRP), which when completed would be that largest, most comprehensive epidemiological study of its kind.

NRC/DOE; Yucca Mountain Repository

Recommendation: At least $30 million for DOE from the Nuclear Waste Fund and $10 million for NRC to support continuation of Yucca Mountain licensing activities.

The ANS supports the development and use of a geological repository for disposal of high-level radioactive waste and the expeditious completion of the Yucca Mountain licensing process in an open, technically-sound manner. In October 2014, the NRC published Volume 3 of its safety evaluation report on the Yucca Mountain project. In it, the NRC staff found that "the Department of Energy's repository design meets the requirements that apply after the repository is permanently closed, including but not limited to the post-closure performance objectives in NRC's regulations," and that the proposed facility "meets the NRC's limits or standards for individual protection, human intrusion and groundwater protection."

Given NRC's determination, the ANS believes that it should move forward with the remainder of the licensing process, including reestablishment of the official docket and direction to the Construction Advisory Board (CAB) to restart its suspended proceeding.

We recognize that the project is politically controversial, and that ultimately the State of Nevada retains authority over several "critical path" issues, including the necessary water rights to operate the facility. However, whether or not Yucca Mountain ultimately

becomes operational, completing the licensing process is fundamental to demonstrating the efficacy of NRC's licensing process. Our funding recommendation for DOE would support development of a reliable cost estimate for Yucca Mountain restart and provide the needed assistance for local communities who are parties to the licensing process.

National Nuclear Security Administration (NNSA); Mixed Oxide Fuel Fabrication Facility project (MOX facility)

Recommendation: $345 million to continue construction of the MOX facility

ANS strongly supports the goal of nuclear nonproliferation and believes it is important for the United States and the Russian Federation to follow through on commitments made to dispose of surplus weapons plutonium. Although the total cost of the MOX facility at Savannah River has increased beyond earlier estimates, substantial progress has been made on the facility and MOX fuel offers a means of plutonium disposition that is proven on an industrial scale and acceptable to the Russian Federation. ANS believes Congress should fund the completion of the MOX Facility unless and until a superior means of accomplishing the nonproliferation goal of plutonium disposition has been established.

AMERICAN
SOCIETY FOR
MICROBIOLOGY

Public and Scientific Affairs Board

Statement of the American Society for Microbiology
Submitted to the House Committee on Appropriations, Subcommittee on Energy and Water Development on the Fiscal Year 2017 Appropriation for the Department of Energy, Office of Science

March 15, 2016

The American Society for Microbiology (ASM) asks Congress to support the US Department of Energy's (DOE) Office of Science by approving the Administration's FY 2017 request for $5.672 billion, an increase of $325 million over FY 2016 or 6.1 percent. The proposed FY 2017 level sustains the innovations from DOE supported researchers and the unique scientific facilities constructed and operated by the Office of Science.

The Office of Science sponsors scientific inquiry that transforms our knowledge about the natural world and builds connections between initial discovery and new products and processes. It directly funds research in chemistry, physics, materials science, biology, environmental science, applied mathematics and computer science. A significant contributor to the US R&D enterprise, DOE is the nation's single largest supporter of basic research in the physical sciences. The FY 2017 request would support over 24,000 investigators at DOE laboratories and about 300 other institutions. Not only does DOE directly shape the nation's output in science and technology, its financial support also benefits graduate and undergraduate students, thus building tomorrow's workforce and sustaining US global competitiveness.

The FY 2017 budget request includes operation of dozens of scientific user facilities overseen by the Office of Science. The facilities provide state-of-the-art research tools, often one of a kind or not openly accessible elsewhere, that include supercomputers, synchrotron light and neutron sources, particle accelerators and colliders, nanotechnologies and genomic and "omics" capabilities. For FY 2016, DOE estimates that more than 31,000 researchers from universities, national laboratories, industry and international partners will utilize these unique resources.

With DOE support, either direct or indirect via DOE user facilities, US academia, industry and National Laboratories have developed new materials, pharmaceuticals, computational and communication capabilities, databases and computer networks, energy sources and many more products with substantial economic value. There have been improvements in environmental stewardship and clean energy as a result of DOE funding.

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DOE Support Advances Biological Sciences

Within the DOE's Office of Science, the Biological and Environmental Research (BER) program supports fundamental research in genomics, climate modeling, carbon storage, biofuels and studies related to microorganisms and microbial communities. The FY 2017 budget request allocates $662 million for BER, an 8.7 percent increase from FY 2016. The ASM strongly supports the investments in new platform microbes for biofuels and bio products engineering and in microbiome research.

The FY 2017 request earmarks $10 million for the new DOE initiative in microbiome research, with the mission "to understand the functional interactions between microbes and plants in targeted environments of relevance to BER's bioenergy and environmental science challenges." We agree that today's exploration in these areas depends in large part on better understanding of microbiome function. There is growing interest across the biological sciences in microbiomes, the collective microorganisms that live in, on and around specific plants, animals or environments. DOE supported scientists have studied microbial communities for years and new focus on microbiomes will build upon previous DOE accomplishments.

Relevant studies from the past year examined microbial communities surrounding plant roots and in deserts and scientists have aggregated research data to create a model for predicting how microbiomes may respond to changing conditions. Others have determined how crop rotation changes soil microbiota in ways that benefit plant growth. BER funded researchers discovered that two different species of microbes living near vents in the ocean floor, even if separated by distance, communicate via sharing electrons in a symbiotic partnership to consume methane. Another team found that the microbiome of Alaska tundra soil used in field tests was significantly altered after only 1.5 years of experimental warming.

Three DOE facilities operated by the BER program complement its focus on atmospheric chemistry and physics, ecology, biology and biogeochemistry: the Atmospheric Radiation Measurement Climate Research Facility (ARM), with locations worldwide for continuous data gathering; the Environmental Molecular Sciences Laboratory (EMSL); and the Joint Genome Institute (JGI). Results from JGI in particular have already benefited the United States both scientifically and economically. It provides genome sequencing and analysis applicable to multiple areas of increasing societal significance like bioenergy. Its work with plant, microbial and fungal genomes is world class, a leader in the field of genomics and high throughput DNA sequencing. Current JGI research includes greater attention to systems biology and the roles played by the genomes of a system's inhabitants.

Making these cutting edge tools available to both DOE and non-DOE investigators is one of the Office of Science's most powerful contributions to US science and technology. Many studies would be impossible or unlikely without these resources. The following recent examples underscore their relevance to the diverse field of microbiology:

- University and DOE scientists used cryoelectron tomography to capture the first detailed microscopy images of ultra-small bacteria, which have an average volume of 0.009 cubic microns (more than 150,000 could fit on the tip of a human hair). Common in groundwater, they are considered the smallest a cell can be and still sustain life.
- In November, a BER funded database from a decade of EMSL research on microbial species was released for wider research use. The catalog contains more than 35,000 files with molecular data on more than 100 species, many human pathogens or of environmental importance. Release of the massive library was possible through recent advances in computer based metadata repositories, a current trend in US research.
- For the first time, researchers produced 3-D images of a structure inside an intact virus, using a DOE X-ray laser beam and one of the so called "giant viruses" first described about a decade ago. The study established a new imaging technique applicable to many types of biological samples.

DOE funded research has utilized diverse microbial model systems for decades, including the search for solutions to environmental threats. Microbial remediation of uranium (and other radionuclides) sites and contaminated waters has been the goal of multiple DOE projects. Microbe based studies examine environments' responses to climate change and carbon cycling. They contribute to DOE's cross cutting Water Energy Nexus strategy, which coordinates R&D responses to environmental challenges. The Office of Science, via its user facilities, also supports basic research on biothreats to public health and agriculture, including the following:

- University DOE collaborators have described the structures of two proteins believed to pump antibiotics from bacteria, rendering them drug resistant. Combining sulfonamide with gonorrhea bacteria and with an aquatic bacterium that feeds on oil turned on the bacteria's protective protein pumps.
- Using X-ray crystallography at a DOE facility, a team from industry and a non-profit institute looked at different stages in the development of a protein fragment found on the surface of all influenza viruses, using the information to synthesize a mimic structure that could lead to a universal influenza vaccine.
- Discovering commonalities between enzymes from infectious bacteria and an enzyme in the intestinal parasite *Cryptosporidium parvum* has potential in drug discovery to combat antibiotic resistant pathogens.
- Using CRISPR/Cas methods and a DOE macromolecular crystallography beamline instrument, scientists uncovered the structural basis by which bacteria steal genetic information from invading viruses to use in their own immunological system.

DOE Research Stimulates US Bioeconomy

In FY 2017, the Office of Science will continue its support of the government wide Mission Innovation initiative to accelerate fundamental discovery and encourage a new generation of scientists and engineers conducting basic research. Biofuels and clean

energy are among the rapidly growing sectors of DOE innovation offering huge economic returns. A significant focus of DOE's Advanced Research Projects Agency–Energy (ARPA-E) is stimulating high risk, high impact energy research with major economic potential. Authorized under the America COMPETES Act of 2007, ARPA-E has funded over 450 projects. The Office of Science likewise supports cross disciplinary approaches at the leading edges of energy innovation, many utilizing microorganisms and plant microbe systems. It currently funds 32 Energy Frontier Research Centers (EFRCs) in 33 states and the District of Columbia, productive collaborations among universities, national laboratories, nonprofit organizations, and industry.

The Office of Science also sustains DOE's three Bioenergy Research Centers (BRCs), which are engineering microorganisms and plants toward optimal biofuel production. Established in 2009, the BRCs just reported the disclosure of their 500th invention. They focus on producing biofuels from cellulosic biomass in wood, grasses, and other plant parts. BRC discoveries will generate next generation fuels, new industry, and a growing US job sector. All of these multidisciplinary DOE programs play a unique role in accelerating R&D to build the new US energy economy.

Using biological systems in novel ways offers exciting possibilities in manufacturing. DOE funded examples include development of a catalyst that converts bio based ethanol into a widely used industrial chemical currently derived from crude oil and used in products from rubber tires to plastic bottles. Synthetic biology and metabolic engineering tools redirected a type of cyanobacteria to make more of a valuable fatty acid rather than glucose. A DOE university team, with expertise in protein biology, computational analysis, biophysics and catalysis, described mechanical coupling of a naturally occurring enzyme that, if used in manufacturing processes, might reduce current energy intensive production of ammonia fertilizers.

The DOE Office of Science funds research that is unique in the biological and environmental sciences. DOE user facilities offer opportunities and resources that often do not exist elsewhere. DOE researchers and others funded by DOE grants continue to make some of the nation's most significant breakthroughs in science and technology.

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Position Statement on the U.S. Department of Energy Fiscal Year 2017 Budget Request submitted by the ASME Energy Public Policy Task Force

March 15, 2016

The American Society of Mechanical Engineers (ASME) Energy Public Policy Task Force (Task Force) of ASME's Committee on Government Relations is pleased to provide this testimony on the Fiscal Year 2017 (FY17) budget request for Research and Development (R&D) programs in the Department of Energy (DOE).

ASME has long advocated a balanced portfolio of energy supplies to meet the nation's growing energy needs, including advancing clean coal, petroleum, nuclear, natural gas, waste-to-energy, biomass, solar, wind, hydroelectric power, and other technologies. ASME also supports energy efficient building and transportation technologies, as well as transmission and distribution infrastructure sufficient to satisfy demand under reasonably foreseeable contingencies. A balanced energy portfolio will allow the U.S. to maintain its quality of life while addressing our environmental and security challenges. Sustained growth in the energy systems on which the U.S. depends will also require stability in licensing and permitting processes not only for power generating stations but also for energy supply systems, and transmission and transportation systems.

Office of Energy Efficiency and Renewable Energy (EERE)
EERE manages America's investments in Research, Development and Deployment of DOE's diverse energy efficiency and renewable energy applied science portfolio. The FY17 budget request of $2.897 billion, an $825.4 million, or 40 percent, increase over the FY16 appropriated amount of $2.07 billion, demonstrates the Administration's strong commitment to clean energy technology development. Most of the key EERE programs, including Bioenergy, Solar, Wind, Geothermal, Building Technologies, Vehicle Technologies, and Advanced Manufacturing technologies, receive substantial increases in funding to support the growth of renewable energy and energy efficiency.

While the Task Force appreciates that Congress may not be able to meet the Administration's full request for FY17, we are pleased to see increases for both the Advanced Manufacturing program ($261 million, or a 14 percent increase), as well as the Building Technologies Program ($289 million, or a 44 percent increase). The budget for Vehicle Technologies R&D is similarly slated to receive a $158 million increase to $468.5 million for FY17. We believe that the development of transportation fuel systems that are not petroleum-based is a critical part of our future national energy policy. ASME believes that these high-impact areas of investment offer significant payoffs for the economy as a whole, both in energy savings and potential for innovation job creation.

EERE's Advanced Manufacturing Office (AMO) aims to improve the energy efficiency and productivity of the U.S. manufacturing sector by bringing together industry and research institutions to tackle cross-cutting sectoral challenges. The AMO provides valuable RD&D

funding support and technical assistance through competitive, merit reviewed funding opportunities designed to investigate processes, information, and materials technologies around high-impact energy-related manufacturing technologies.

The Task Force strongly supports DOE's investments in this area, particularly in the areas materials, process engineering, additive manufacturing, and smart grid. We encourage Congress to provide full funding for DOE's request for the nation's Clean Energy Manufacturing Innovation Institutes, including funding for one new institute. ASME similarly supports AMO's funding request for DOE's Energy Innovation Hubs, including the new Energy-Water Desalination Hub, and AMO's contribution towards DOE's Clean Energy Manufacturing Initiative and Energy-Water Nexus crosscuts.

Office of Electricity Delivery and Energy Reliability (OE)
The FY17 budget request of $262 million for OE is a 27.3 percent, increase over the FY16 appropriated amount of $206 million. The Task Force is pleased by the level of interagency coordination related to transmission siting, cyber security activities being led by OE with the Federal Energy Management Agency (FEMA) and the Department of Defense (DOD).

The integration of all cost effective electric generating and storage technologies into the operation of the electricity distribution system is critical to economic operation of the national electric grid. The Task Force believes that R&D related to the integration of the electric grid and its control as a truly national system is imperative for the growth of effective and economic energy generation technologies and we encourage full funding for such research. We urge Congress to strive for full funding for each of these strategic investment areas and to strongly encourage continued inter-office and inter-departmental coordination, as OE's programmatic area of responsibility has a natural connection to the mission of every other DOE Office.

The Task Force believes advances in power electronics, micro-grids, systems integration, controls, and modeling and simulation are going to be critical in a future more modern electric grid. We are pleased to see that the OE budget seeks robust support Energy Storage and the Infrastructure Security and Energy Restoration program areas.

Office of Nuclear Energy (NE)
Total funding for the DOE NE for FY17 would rise to $993.9 million, a 0.7 percent increase over the FY16 enacted amount of $986 million. The Task Force remains convinced that nuclear energy holds an important role in the nation's energy future. While funding for Small Modular Reactors (SMR) Licensing and Technical Support has received a strong request, programs like Reactor Concepts (slated for a $32.9 million budget cut) and Fuel Cycle R&D need sustained funding to aid the nation's transition to a low-carbon energy future. Reactor Concepts is a particularly critical program as the commercial nuclear reactor fleet faces life extension challenges. Lack of funding for this type of research in nuclear energy may adversely impact the ability of the current US reactor fleet to continue to operate past its 60 year life. The loss of funding may also contribute to the loss of the US nuclear technology competitive edge in developing the nuclear technologies of the future.

Office of Fossil Energy (FE)
The FY17 FE R&D budget request proposes structural changes through combining coal and natural gas capture technologies into one category and reducing the number of line items in the program. The U.S. has access to significant unconventional gas and liquid petroleum resources

with the potential to provide an abundant, affordable, and environmentally sound energy source for years to come. Prior FE R&D programs have contributed to making this possible through multidisciplinary and cross-agency funded research.

The potential for environmentally responsible unconventional oil and gas energy development, particularly unconventional offshore resources, will not be realized unless our nation makes the investments to ensure that these resources can be produced reliably, economically, safely, and with minimal environmental impact. Accomplishing this task and keeping the U.S. in the forefront of unconventional fossil energy technology will require basic research, technology development, and advances in low impact environmental technologies that will not be undertaken by industry in the current economic and regulatory climate. We urge Congress to support the Unconventional Fossil Energy Technologies, Gas Hydrates, and Natural Gas programs at their FY 2016 level.

The Task Force recommends funding the Carbon Capture and Storage (CCS) and Advanced Power Systems program area (formerly the CCS and Power Systems area) at the FY16 level. Coal is, and will remain, a critical resource for our nation and the global energy economy. We must continue to invest in research that will reduce coal's environmental impacts and to retain our global leadership in coal-based technology. New systems such as pressurized oxy-combustion and chemical looping combustion should be deployed in the 2025 time frame to retain coal in our national power generation mix. Funding for coal programs should be directed toward large and commercial scale demonstration projects to shorten the development period for deploying new technologies. We further recommend increasing coordination between the Advanced Research Projects Agency-Energy (ARPA-E) and FE programs to ensure the development of newer technologies that can further decarbonize fossil fuels to take advantage of our nation's abundant resources.

The Administration has recommended that $240 million in previously appropriated funds for demonstration projects be reprogrammed to support the core R&D programs. The Task Force strongly recommends that the Fossil Energy R&D programs be funded through new appropriations of at least $650 million and that no funding be deobligated from the demonstration projects program. The Task Force recommends that funding be provided under the new Crosscutting Research and Analysis program to increase allocations for the University Coal Research and HBCU programs and for breakthrough technology research programs at the lower technology readiness levels to develop next generation technologies for fossil energy systems.

Advanced Research Projects Agency-Energy (ARPA-E)

The Task Force supports the $500 million budget request for the ARPA-E. ARPA-E received its first funding as part of ARRA, but has stood out quickly among its fellow DOE programs. ARPA-E has already spun out over 30 new energy companies and represents a significant opportunity for the U.S. to cultivate technological breakthroughs related to energy sources, and uses. ARPA-E is also a highly-leveraged federal investment, has the agency has received over $1.0 billion in matching private sector investment for start-up spin-offs. A steady commitment to ARPA-E has begun to encourage new energy technology innovation and the Task Force believes that this is a worthwhile endeavor for the DOE as we seek to accomplish technological breakthroughs in energy technology research.

Office of Science

The mission of the Office of Science (SC) is the delivery of scientific discoveries and major

scientific user facilities and tools to transform our understanding of nature and to advance the energy, economic, and national security of the United States. The FY17 budget proposal of $5.672 billion is an increase of $325 million, or 6.0 percent, from the FY16 appropriation.

ASME urges Congress to provide the SC with *at least* the Administration's requested amount in FY17. This will enable the Office to optimize the operation of its unique scientific facilities which are used by tens of thousands of industry, university, and government scientists and engineers and expand university research through dedicated, competitive grants. We also ask Congress to restore proposed $40 million cut to the domestic research budget within the Fusion Energy Science program without compromising the integrity and vitality of all of DOE's Science programs.

As successive budget cycles come and go, the nation is getting further away from the funding trajectories necessary to sustain long-term energy innovation. Science programs in high energy physics, fusion energy sciences, biological and environmental research, basic energy sciences, and advanced scientific computing, serve, in some small way, every student and research institution in the country. These funds support not only research at the DOE Laboratories, but also the work at a large number of researchers from other federal agencies, universities and colleges, and companies that use our national lab system's instruments for cutting edge research across a wide array of disciplines.

Other DOE Programs

DOE is also very active in areas outside of R&D. The environmental remediation program that funds the decommissioning and decontamination of old DOD & DOE facilities is one such research area. The Task Force urges close oversight of funding for the Environmental Management program, requested at 6.1 billion for FY17, a 1.6 percent reduction.

Conclusion

Members of the Task Force consider the issues related to energy to be some of the most important facing our nation. There is an urgent need for more coherent and consistent national energy policies. The Task Force recommends adoption of a broad-based, bipartisan National Energy Vision to provide an outline for the future that reflects our values as a nation, identifies the greatest challenges and opportunities in energy that must be addressed, and guides future policy decisions related to key energy challenges. Such a vision can help ensure that investments in research will be made that grow and strengthen our energy and innovation future domestically and our competiveness and leadership globally. This National Energy Vision should be periodically reviewed and modified as the country's challenges and opportunities change.

We applaud the Administration and Congress for their understanding of the important role that scientific and engineering breakthroughs will play in meeting our energy challenges. To promote such innovation, strong support for energy research will be necessary across a broad range of technology options. DOE research can play a critical role in allowing the U.S. to use our current resources more effectively and to create more advanced energy technologies.

Thank you for the opportunity to offer testimony regarding both the R&D and other parts of the proposed budget for the DOE. The Task Force is pleased to respond to requests for additional information or perspectives on other aspects of our nation's energy programs.

This statement represents the views of the Energy Public Policy Task Force of ASME's Committee on Government Relations and is not necessarily a position of ASME as a whole.

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Cultivating a better future through plant biology research

Official Written Testimony in Support of the Department of Energy's Office of Science Fiscal Year 2017 Budget

Submitted to the Subcommittee on Energy and Water Development
Committee on Appropriations
United States House of Representatives
Submitted by
American Society of Plant Biologists
March 15, 2016

On behalf of the American Society of Plant Biologists (ASPB), we submit this written testimony to support the fiscal year (FY) 2017 requested level of $5.672 billion for the Department of Energy's (DOE) Office of Science. ASPB supports the FY 2017 request for the Office of **Basic Energy Sciences at $1.936 billion** and the Office of **Biological and Environmental Research at $661.9 million**. The testimony highlights the importance of biology—particularly plant biology, 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 believes investments in scientific research will be a critical step toward economic recovery. We would also like to thank the Subcommittee for its consideration of this testimony and for its support for the basic research mission of the DOE Office of Science.

ASPB is an organization of 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 basic 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 world 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 maximize and leverage modest federal funding in order to understand the basic function and mechanisms of plants. A strong investment in plant biology research is important considering the significant positive impact crop plants have on the nation's economy and in addressing some of our most urgent challenges like energy and food security.

In order to address these future challenges, ASPB organized a two-phase Plant Science Research Summit 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 research agenda and resulted in a report—*Unleashing a Decade of Innovation in Plant Science: A Vision for 2015-2025* (plantsummit.files.wordpress.com/2013/07/plantsciencedecadalvision10-18-13.pdf). The report, part of an ongoing and iterative process, puts forth a ten-year consensus plan to fill critical gaps in our understanding of plant biology and 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.

DOE 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 understanding how basic biological processes work. Within BER, ASPB supports the many plant science programs, including the proposed funding increases for Plant Genomes for Bioenergy Research. For this reason, ASPB supports the Administration's FY 2017 request for the Office of Basic Energy Sciences and the Office of Biological and Environmental Research. 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. ***ASPB strongly encourages additional funding for the DOE Office of Science that would specifically target funding at individual or small-group grants for bioenergy and plant growth research.***

- Considerable research interest is now focused on the processing of plant biomass for energy production. Fundamental discoveries of 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 full 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 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.

Outside Witness Testimony
House Committee on Appropriations
Subcommittee on Energy and Water Development
Re: Army Corps of Engineers, Civil Works

Submitted by: Chad Berginnis, Executive Director
Association of State Floodplain Managers

The Association of State Floodplain Managers (ASFPM) is pleased to have the opportunity to comment on the Fiscal Year 2017 budget request of the Army Corps of Engineers for Civil Works. ASFPM is a non-profit association of state and local officials as well as engineers, planners and other professionals who support those officials. The ASFPM has 17,000 members nationwide and 36 chapters that represent 41 states. The mission of the membership is reduction of loss of life and property due to flooding.

ASFPM has long supported the technical assistance programs of the Army Corps of Engineers Civil Works Program. Corps expertise in assisting communities to develop solutions to flood challenges can make major strides toward reducing flood losses without taxpayer investment in large Corps projects. The technical assistance programs include Section 22 Planning Assistance to States (PAS), Flood Plain Management Services (FPMS), National Flood Risk Management Program (NFRMP) and the Silver Jackets program.

It appears that the overall amount in the FY 2017 budget request for these programs has been reduced from the FY 2016 requested and enacted levels of $31 million. The FY '16 budget documents featured these programs prominently, but this is not the case with the FY '17 request. It appears that the overall amount may be under $26 million.

These programs represent a relatively small portion of the budget for the Army Corps of Engineers, yet have a significant return on investment. Many smaller jurisdictions, which would never qualify for a major Corps project nor be able to afford the long term operation and maintenance (O&M) costs, can develop smaller projects which can involve long-term non-structural measures. The Silver Jackets program has the added advantage of being able to bring in other programs in the federal family to assist in addressing flood-related challenges.

ASFPM members urge that these technical assistance programs be funded at least at the enacted FY '16 level of $31 million. We strongly recommend expansion of Corps engagement with such programs because of their great value in assisting states and communities to reduce their future losses due to flooding.

We would also urge the Subcommittee to continue funding for the Corps' Water Resources Priorities Study. The FY '17 budget request includes $1 million for this

purpose. The study will assess the Nation's flooding vulnerabilities across all regions of the U.S. and will analyze effectiveness of programs, authorities, policies, roles, and activities for flood damage and flood risk reduction. This unique study, originally authorized in WRDA 2007 (Section 2032) will provide Congress with a broad overview perspective of federal flood risk reduction programs and trends, including ways to potentially reduce costs by improving the effectiveness, efficiency, and accountability of existing programs and strategies.

We are disappointed that the Administration's budget request does not contain start-up funding for the National Levee Safety Program. That program was authorized in the Water Resources Reform and Development Act of 2014 (WRRDA 2014), but has not yet been stood up. There are 30,000 miles of levees in the U.S.. Helping states and communities ensure that those levees are properly built, operated and maintained is critical to reducing future disaster costs. ASFPM urges the Subcommittee to consider funding this program.

Thank you for considering the views of the Association of State Floodplain Managers. We would be glad to respond to any questions. Please contact Chad Berginnis, ASFPM Executive Director at cberginnis@floods.org.

Testimony
Theodore C. Cooke
General Manager
Central Arizona Project

House Committee on Appropriations
Subcommittee on Energy and Water Development

Support for $10.3 million in Fiscal Year 2017 Funding for the Colorado River Basin Salinity Control Program under Reclamation's Basinwide Program
March 14, 2016

On behalf of the Central Arizona Water Conservation District (CAWCD), I encourage you to include $10.3 million for the U.S. Bureau of Reclamation's Basinwide Program for the Colorado River Basin in the Fiscal Year 2017 Appropriations bill. Continued funding for the Basinwide 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 delivers an average of over 1.5 million acre-feet 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. The canal provides an economic benefit of $100 million annually, accounting for one-third of the entire Arizona gross state product. 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. The Environmental Protection Agency (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 the 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 of salt at about $382 million per year. Modeling by Reclamation indicates that *quantifiable* damages would increase to approximately $614 million annually by 2035 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.

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 U.S. 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. 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 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. 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 67,000 tons of additional salinity control measures to be implemented by Reclamation and the USDA's Natural Resources Conservation Services (NRCS) by 2018, or approximately 11,400 tons of new control each year.

The current drought that has significantly impacted the West affects the amount of and quality of available water, which in turn has the potential to exacerbate the salinity concentration levels. In addition to initiatives such as the Drought Response program and WaterSMART Grants, adequate funding for salinity control will prevent water quality of the Colorado River from further degradation and ensure the availability of supplies for future generations.

CAWCD urges the subcommittee to include $10.3 million for the U.S. Bureau of Reclamation's Basinwide Program for the Colorado River Basin in the Fiscal Year 2017 Appropriations bill. Continuation of adequate funding levels for salinity within this program will prevent further degradation of water quality of the Colorado River and significant increases of economic damages to its nearly 40 million municipal, industrial and irrigation users.

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OUTSIDE WITNESS TESTIMONY
FY 2017 APPROPRIATION

TO: **The Honorable Mike Simpson, 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 8, 2016**

Waters from the Colorado River are used by approximately 40 million people for municipal and industrial purposes and used to irrigate approximately 5.5 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 $382 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 will rise to approximately $614 million annually by the year 2035 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 **$10.3 million** is required in 2017 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 amount identified above is required to get the Basinwide Program back on pace with the overall Program implementation needs.

Concentration of salt in the Colorado River causes approximately $382 million in quantified damages annually 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 67,000 tons of additional salinity control to be implemented by Reclamation and NRCS by 2018, or approximately 11,400 tons of new control each year by Reclamation. Based on current cost levels, Reclamation's funding under its Basinwide Program needs to be $10.3 million in FY2017. 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 salinity concentrations in the water will be more widespread in the United States and Mexico.

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.

OUTSIDE WITNESS TESTIMONY
FY 2017 APPROPRIATION

TO: **The Honorable Mike Simpson, 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: **Tanya Trujillo, Executive Director**
Colorado River Board of California

DATE: **March 14, 2016**

This testimony is in support of Fiscal Year (FY) 2017 funding for the Department of the Interior for the Title II Colorado River Basin Salinity Control Act of 1974 (P.L. 93-320). In the Act, Congress designated the Department of the Interior, 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 although the President's Budget requests $8.2 million, a funding level of $10.3 million should be provided in 2017 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 5.5 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 at about $382 million per year. Modeling by Reclamation indicates that the *quantifiable* damages will rise to approximately $614 million annually by the year 2035 without continuation of the Program.

The Colorado River Board of California (Colorado River Board) is the state agency charged with protecting California's interests and rights in the water and power resources of the Colorado River system. In this capacity, California participates along with the other six Colorado River Basin states through 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

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The Natural Resources Agency · State of California · Edmund G. Brown, Jr., Governor

requirements of the Clean Water Act, 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 by this testimony is consistent with the Forum's *2014 Plan of Implementation* for continued salinity control efforts within the Colorado River Basin. The Forum's *2014 Plan of Implementation* can be found on this website: http://coloradoriversalinity.org/docs/2014%20Final%20REVIEW%20-%20complete.pdf. If adequate funds are not appropriated to Reclamation's Basin-wide Program, 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 to meet the leaching requirements in the agricultural sector,
- an increase in the amount of imported water,
- an increased 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,
- 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 *2014 Plan of Implementation*, as adopted by the Basin States and approved by EPA, calls for 67,000 tons of additional salinity control measures to be implemented by Reclamation by 2018, or approximately 11,400 tons of new salinity control measures each year. Over the past years, the Salinity Control Program has proven to be a very cost effective approach to help mitigate the impacts of increased salinity in the Colorado River. Adequate federal funding of this important Basinwide program is essential. Based on current program cost levels, Reclamation's funding under its Basinwide Program needs to be at least $10.3 million to achieve these goals.

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TESTIMONY OF
The Honorable Jeremy Red Star Wolf, Chairman
Columbia River Inter-Tribal Fish Commission
Regarding the U.S. Army Corps of Engineers Civil Works FY2017 Budget
Appropriations Subcommittee on Energy and Water Development and Related Agencies
United States House of Representatives
March 15, 2016

Mr. Chairman and members of the subcommittee, the Columbia River Inter-Tribal Fish Commission (CRITFC) is pleased to share its view on the U.S. Army Corps of Engineers FY2017 budget. We have specifically identified the following funding needs:

FY2017 Request: $87.5 million for Columbia River Fish Mitigation (CRFM) of which:

- **CRFM [Willamette River] - $23.9 million – we support the request**
- **CRFM [Columbia River] - $57.6 million – we support the request**
- **CRFM [Pacific Lamprey] - $6.0 million - $3.5 million above the request**

Columbia River Fish Mitigation: The Corps' Columbia River Fisheries Mitigation program mitigates impacts to anadromous fish resulting from the development and operation of mainstem federal Columbia and Snake River dams. Authority for this program is contained in the original Congressional dam construction and operation authorities.

Recently, the Corps expanded the purposes of CRFM to include implementation of fish passage related improvements to Corps dams in the Willamette River Basin. As well as, implementation of lamprey passage improvements at mainstem Columbia and Snake River dams through agreements detailed in the Columbia Basin Fish Accords. The revised cost and schedule from the Corps is $2.79 billion through 2023.

Lamprey Budget Concerns in FY2017 and FY2018
We are very pleased that the Corps has taken its lamprey commitments seriously. The Corps and the Commission's member tribes are implementing a 10-year lamprey plan while simultaneously implementing high priority lamprey actions. The Columbia Basin Fish Accords have given both flexibility and stability to tribal projects and the contracting process. We are able to plan projects over longer - more meaningful -timeframes and adjust tasks between years where necessary for the good of the project or to address regional needs. The result is improved and more efficient projects and process.

The tribes were taken by surprise when lamprey was segregated in the Columbia River Fish Mitigation (CRFM) federal budget Request for FY2016 and at a dollar amount less than Corps/Tribal technical staff recommended. The tribal-USACE lamprey technical working group has worked collaboratively to identify priority lamprey actions over the Accords period.

However, budget require this group to reprioritize actions multiple times making out-year planning difficult. The Pacific Lamprey budget under CRFM will need an average of $4.8 million/year commitment from the Corps in 2017/2018 to meet Accords commitments. Our $6 million request reflects the Tribal/Corps shovel-ready work plan.

History and Background:

CRITFC was founded in 1977 by the four Columbia River Treaty Tribes: Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of the Warm Springs Reservation of Oregon, Confederated Tribes and Bands of the Yakama Nation, and the Nez Perce Tribe. CRITFC provides coordination and technical assistance to these tribes in regional, national and international efforts to protect and restore our shared salmon resource and the habitat upon which it depends. Our collective ancestral homeland covers nearly one-third of the entire Columbia River Basin in the United States, an area the size of the State of Georgia.

In 1855, the U.S. entered into treaties with the four tribes[1] whereupon we ceded millions of acres of our homelands to the U.S. In return, the U.S. pledged to honor our ancestral rights, including the right to fish in all Usual and Accustomed locations. Unfortunately, a perilous history brought the salmon resource to the edge of extinction with 12 salmon and steelhead populations in the Columbia Basin listed under the Endangered Species Act (ESA).

The CRITFC tribes have arrived as globally-recognized leaders in fisheries restoration and management working in collaboration with state, federal and private entities. We are principals in the region's efforts to halt the decline of salmon, lamprey and sturgeon populations and rebuild them to levels that support ceremonial, subsistence and commercial harvests. To achieve these objectives, our actions emphasize 'gravel-to-gravel' management including supplementation of natural stocks, healthy watersheds and collaborative efforts.

In summary, through the combined efforts of the four Columbia River Treaty Tribes, supported by a staff of experts, we are proven natural resource managers. Our activities benefit the region while also essential to the U.S. obligation under treaties, federal trust responsibility, federal statutes, and court orders. We ask for your continued support of our efforts. We are prepared to provide additional information you may require on our views of the U.S. Army Corps of Engineers FY2017 Budget.

Contact: Charles Hudson, Director of Governmental Affairs, CRITFC, 503-731-1257, hudc@critfc.org

[1] Treaty with the Yakama Nation, June 9, 1855, 12 Stat. 951; Treaty with the Tribes of Middle Oregon, June 25, 1855, 12 Stat. 963; Treaty with the Umatilla Tribe, June 9, 1855, 12 Stat. 945; Treaty with the Nez Perce Tribe, June 11, 1855, 12 Stat. 957

Madeline Urbish, Director
Coalition for the Delaware River Watershed

The Honorable Mike Simpson
Chair
Appropriations Subcommittee on Energy and Water Development
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The Honorable Marcy Kaptur
Ranking Member
Appropriations Subcommittee on Energy and Water Development
2186 Rayburn House Office Building
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RE: Federal Funding for the Delaware River Basin Commission in U.S. Army Corps of Engineers Budget

March 15, 2016

Dear Chairman Simpson and Ranking Member Kaptur,

As organizations working to protect and restore water resources throughout the four states of the Delaware River Watershed, we are requesting that the Federal funding be reinstated for the Delaware River Basin Commission (DRBC). DRBC is the primary agency charged with managing a river system that supplies drinking water for 16 million people, supports a thriving economy, and provides valuable wildlife habitat. Despite the congressionally approved compact creating the DRBC with Federal membership (P.L. 87-328) and the Water Resources Reform and Development Act of 2014 (P.L. 113-121, Section 4001) that clearly expresses the intent for Federal funding to be allocated to DRBC and other river basin commissions in the mid-Atlantic, no funding was provided in the President's FY 2017 Budget Request. We urge you to allocate this funding in accordance with Congress' intent and the Federal government's previously agreed to obligation.

The 1961 Delaware River Basin Compact (P.L. 87-328) established the funding obligations of the signatory parties, including the Federal government and the four states within the Basin's boundaries. A subsequent agreement ensures that every dollar of Federal investment in the DRBC is leveraged by an additional four dollars in financial support from other signatory members. This funding obligation has not been met since 1996, which has led to significant and sustained budget shortfalls for the commission. The impacts to the DRBC's budget have been exacerbated due to recent cuts by the state signatories, who have cited the lack of Federal funding as a reason for reducing their own payments. Even with this lack of Federal funding, the DRBC has continued to make annual payments of approximately $1.3 million to the U.S. Treasury to cover the costs of releasing water from two Federally-owned reservoirs during dry conditions to repel the upstream migration of salt water that could threaten Philadelphia's drinking water intakes and to ensure sufficient water for industrial withdrawals, among other needs.

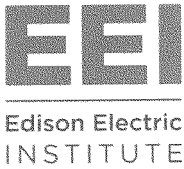
We respectfully request that you appropriate $725,000 to the DRBC in fiscal year 2017, as was clearly intended under the Delaware River Basin Compact and Section 4001 of the Water Resources Reform and Development Act of 2014. Events over the past year have vividly demonstrated that our nation's water resources are vulnerable to contamination and depletion. The Federal government's relatively small annual contribution represents a sound investment in an effective model defined by Federal-interstate cooperation and collaboration, rather than expensive remediation or conflict seen elsewhere. Thank you for your consideration of this request. Please Contact Madeline Urbish, Director of the Coalition for the Delaware River Watershed at (609) 392-1182 or madeline.urbish@njaudubon.org with any questions regarding this letter.

Sincerely,

Madeline Urbish
Director
Coalition for the Delaware River Watershed

* * * *

The Coalition for the Delaware River Watershed unites organizations working throughout the region to enhance their capacity to effectively advocate for protecting and restoring the Delaware River Basin. It works to achieve this mission by coordinating communications, messages, and actions fostering accountability for success at the federal, state, and local levels.



Power by Association

Written Statement Submitted by Thomas R. Kuhn, President, Edison Electric Institute
Regarding Fiscal Year 2017 Appropriations For the Department of Energy
To the Subcommittee on Energy and Water Development
House Committee on Appropriations
March 11, 2016

The Edison Electric Institute (EEI) respectfully submits this written testimony for Fiscal Year (FY) 2017 to the House Appropriations Subcommittee on Energy and Water Development. We appreciate this opportunity to share our views on Department of Energy (DOE) programs and priorities that address the reliability and resiliency of the electric power grid.

EEI, the association of U.S. shareholder-owned electric companies, represents an integral and robust component of our nation's economy. Our members provide electricity for 220 million Americans, directly employ more than 500,000 workers, and operate in all 50 states and the District of Columbia. Our companies constitute a $930-billion industry that accounts for more than 2 percent of GDP, and serves nearly 70 percent of America's industries, businesses and consumers.

Importance of Balanced Energy Mix

EEI's member companies always have relied on a variety of domestic fuels to generate electricity, including coal, nuclear, natural gas, and renewables. As energy markets and our generation mix change, maintaining a balanced energy mix remains a top priority to help preserve the safe, reliable, affordable, and clean electricity that our customers expect. A balanced energy mix is also essential for our economic stability as well as our national security.

Today, nearly one-third of U.S. power generation comes from zero-emissions sources like nuclear and renewables, including hydropower, wind, and solar. It is projected our members will spend more than $300 billion over the next three years to enhance the power grid and to make our generation mix even cleaner.

Significant Industry Investment in the Electric Grid

In 2015, our industry is estimated to have spent $108.6 billion in total capital expenditures. This level of investment, a fourth consecutive annual record, is more than twice what it was a decade ago.

With a renewed focus on the power grid, transmission and distribution have become incrementally more important to overall investment. Based on an analysis performed last fall, transmission commanded 18 percent of total capital expenditure dollars, up from about 17 percent in 2013, and distribution comprised 26 percent of total capital expenditures, up from 21 percent versus two years prior. Spending in both of these categories is expected to increase steadily in relative importance over the new few years.

In formulating a FY 2017 budget that addresses our industry's needs as well as our nation's economic, environmental and security goals, EEI respectfully requests Subcommittee support for the following DOE activities.

Unprecedented Industry-DOE Partnership

For the electric power industry, strengthening the security and resiliency of the power grid is of paramount importance. Yet, protecting our critical infrastructure in today's threat environment is no easy task. Sophisticated cyber threats are constantly adapting and evolving. Our security strategies must constantly evolve and must be closely coordinated with the federal government.

The importance of close industry coordination with the government cannot be overstated. Electric power companies are experts in running the grid, and the federal government has law enforcement and intelligence-gathering capabilities. By working together, industry and government can greatly enhance our nation's ability to defend and protect against threats.

While our industry already engages in information sharing and has mandatory and enforceable reliability, physical security and cybersecurity standards in place, improvements in the sharing of actionable security information is vital. To these ends, EEI applauds passage of the cybersecurity information sharing legislation that was included in last year's omnibus appropriations bill. This legislation provides legal and regulatory incentives for the voluntary sharing of cyber threat information between the private sector and the government, and will enhance communication among the federal government, electric power companies, and other critical infrastructure industries.

Electricity Subsector Coordinating Council

The Electricity Subsector Coordinating Council (ESCC) serves as the principal liaison between the federal government and the electric power industry, with the mission of coordinating efforts to prepare for, and respond to, national-level disasters or threats to critical infrastructure. The ESCC includes company CEOs and trade association leaders, representing all segments of the industry, and senior government officials. Underlying this partnership is a mutual understanding that the protection of critical infrastructure is a shared industry-government responsibility. It allows both parties to better understand how each plans for, and responds to, incidents and also helps to improve communications.

Cybersecurity for Energy Delivery Systems Program

As the electric sector-specific agency (SSA), DOE has the mission and expertise to work with industry to help mitigate the risk resulting from cyber and physical threats. DOE's long history of collaboration with industry has created integral relationships that expand situational awareness and information sharing to reduce risk.

Within DOE, the Office of Electricity's (OE) Cybersecurity for Energy Delivery Systems (CEDS) program supports cyber risk and incident management activities. Working closely with the energy sector and government partners, the Department's FY 17 request supports research on cybersecurity solutions, information sharing and coordinated cyber incident management capability. National laboratory participation in CEDS helps to ensure that critical skill sets remain current in the energy sector, guaranteeing support for our companies in the event of an attack.

To these ends, EEI requests full support for the CEDS program as well as the following three OE cyber security initiatives:

- *Cybersecurity Risk Information Sharing Program*

  EEI supports the Cybersecurity Risk Information Sharing Program (CRISP), a collaborative effort with OE and private-sector energy partners to facilitate timely sharing of threat information and deployment of situational awareness tools to enhance the private sector's ability to identify threats and coordinate the protection of critical infrastructure. In August 2014, the Electricity Information Sharing and Analysis Center (E-ISAC) agreed to manage CRISP for its sector. To date, a large number of companies have signed contracts and more are scheduled to join. For FY 2017, a "Next CRISP Operational Pilot" has been proposed to improve enrichment of industry data with U.S. government information and increase the speed of near-real-time sharing.

- *Cybersecurity Capability Maturity Models and Risk Management*

  To encourage adoption of best practices and to inform cybersecurity investment decisions, industry has worked with DOE to develop the Cybersecurity Capability Maturity Model (C2M2). The Department also has worked with industry on the creation of a Risk Management Process (RMP), which enables organizations to apply effective and efficient risk management processes and tailor them to meet their organizational requirements. For FY 2017, DOE supports expanded implementation of the C2M2 and RMP, including continued expansion of the electric company volunteers to demonstrate C2M2 data analytics and benchmarking methodologies and to build on existing benchmarking work to lay a foundation for a C2M2 web portal.

- *Large-Scale Cyber Event Reconstitution*

  For FY 2017, DOE will begin development of innovative solutions to use for reconstitution after a large-scale cyber event. In collaboration with other government and industry partners, governmental and non-governmental resources will be leveraged to create solutions that will support the continuity of essential operations for the electric sector under a large-scale cyber event focused on restoration.

Cyber Mutual Assistance Program

In coordination with OE's large-scale cyber event reconstitution effort, EEI will be focused on establishing an industry-wide cyber mutual assistance program. Following the Grid Security Exercise (GridEx) III in November 2015, the ESCC determined that more work was needed to help coordinate sector-wide response and recovery efforts on cybersecurity. As a result, the ESCC is convening subject matter experts and grid operators who can inform the establishment of a cyber mutual assistance regime for the industry.

The electric sector is fortunate to have a history and a culture of coordinating response when large-scale natural disasters impact the reliability of the power grid. However, cyberspace is independent of physical and geographical boundaries. A number of internal and external capabilities are needed to triage, respond, remediate, and recover from a widespread cyber incident, so EEI is looking for ways to

scale-up response efforts in a well-coordinated manner, working with partners at the local, regional, North American, and federal levels.

Infrastructure Security and Energy Restoration

DOE's Infrastructure Security and Energy Restoration (ISER) program leads national efforts, in cooperation with public and private-sector stakeholders, to enhance the reliability and resiliency of U.S. energy infrastructure. The program's goals are to drive an efficient restoration process when emergencies occur and minimize disruptions to electricity customers. ISER relies on public-private partnerships to upgrade, restore, and secure critical energy infrastructure.

EEI strongly supports ISER-led efforts to develop an effective, timely, and coordinated cyber incident management capability as part of its all-hazards approach to incident response for the energy sector. In collaboration with the Department of Homeland Security (DHS), the Federal Energy Regulatory Commission (FERC), E-ISAC, and international stakeholders, and in concert with work performed under the CEDS program, ISER will continue development and formalization of incident management processes and procedures that align with the National Incident Management System and National Response Framework.

Transformer Resilience and Advanced Components

DOE's Transformer Resilience and Advanced Components (TRAC) program supports modernization and resilience of the grid by addressing the challenges facing transformers and other critical grid hardware that are responsible for carrying and controlling electricity from where it is generated to where it is needed. Transformers, power lines, and substation equipment are often exposed to the elements and are vulnerable to an increasing number of natural and man-made threats. To ensure a reliable and resilient electric power system, next-generation grid hardware needs to be designed and built to withstand and recover from the impact of lightning strikes, extreme weather events, electrical disturbances, accidents, equipment failures, deliberate attacks, and other unknowns.

Expanding on concerns over ground-induced currents (GIC) from solar flares, the TRAC program also addresses challenges associated with geomagnetic disturbances (GMD), electromagnetic pulses (EMP), and other physical stresses on transformers and grid components, in cooperation with electricity asset owners and operators. This function of the TRAC program will increase grid resilience, identify requirements for next-generation grid hardware, and accelerate development, demonstration, and deployment of advanced grid components.

Conclusion

Mr. Chairman, our industry has developed a close working partnership with the federal government to address physical and cybersecurity threats to our electric infrastructure. The result of these public-private partnerships is now high-level collaboration between the electric power industry, DOE, FERC, DHS and key federal law enforcement agencies to help secure U.S. energy infrastructure against hazards, whether natural or man-made, physical or cyber. EEI is fully committed to working with your Subcommittee to improve this coordination, and to continue making important investments to improve the security, reliability, and resiliency of the grid in the face of any threat.

Richard Burbank, Chair, Efficiency First
and
Brian T. Castelli, President & CEO, Home Performance Coalition

House Appropriations Committee
Subcommittee on Energy and Water Development

Fiscal Year 2017 Department of Energy Funding for
Residential Energy Efficiency Programs

March 11, 2016

As the leaders of the home performance contracting industry, Efficiency First and the Home Performance Coalition respectfully urge your support for funding to advance programs at the Department of Energy that invest in residential energy efficiency and whole-house initiatives, as outlined in this testimony, in the Fiscal Year (FY) 2017 Energy and Water Development Appropriations bill. On behalf of our stakeholders and members, thank you for this opportunity to express our support for these important programs and initiatives.

Efficiency First (EF) is a national trade association with members across the country that unites the home performance workforce, building product manufacturers and related businesses and organizations in an effort to advance cost-effective energy efficiency solutions for residential customers to create jobs, boost the economy, and fight rising energy costs.

The Home Performance Coalition (HPC) is a national non-profit 501c3 organization that works with governmental agencies, utilities, state programs, contractors, and other stakeholders to strengthen and advance the whole-home energy efficiency upgrades through standards development, stakeholder engagement, policy analysis, research, and education.

Efficiency First and HPC offer their strong support for whole-home residential efficiency programs and initiatives. By looking at a home as a system, customers make more informed energy choices. For example, installing a high-efficiency HVAC unit in a home without insulation in its attic will not result in the home owner receiving the heating and cooling efficiently, nor the comfort expected. Home performance contractors and professionals help home owners make smart energy decisions by making home assessments, recommendations, and improvements based on building science and the whole-home structure. Yet, as building science has developed, so has the home performance industry which is still on the cutting edge as it strives to serve and educate homeowners around the country about the ways and means for reducing their energy use. Public programs that support this industry are vital as it continues to develop.

The following programs at the Department of Energy, in the Energy Efficiency and Renewable Energy Office and Office of Weatherization & Intergovernmental Assistance, deserve the support of the American taxpayer as these programs will provide a significant return on investment by helping to provide energy cost relief to households, support American-based

industry and American jobs, ameliorate issues with the aging electrical grid, and support national security goals.

$23M for Residential Building Integration, with the focus on accelerating the development and adoption of advanced building energy technologies and practices in new and existing homes. The Residential Building Integration program has the capacity to fundamentally transform homebuilding and renovation in this country. However, we recommend that the funding be focused on research, development and the widespread deployment of whole-house energy efficiency through their partnerships with builders, the construction trades, equipment, smart grid technology and systems suppliers, integrators and state and local governments. We encourage the direct engagement with builders, contractors, and business, which are crucial to the success of buildings programs.

$175 M Energy Productivity Innovation Challenge. This program would provide awards to state governments that implement innovative and effective policies such as those that would advance residential energy efficiency upgrades. This program has been known in past fiscal years as the "Race to the Top" initiative. A September 2013 study by ACEEE on a similar proposal notes that the program could result in estimated net savings of $11.8 billion and cut energy by 1.30 Quads and carbon dioxide emissions by 71.25 MMT by 2030. These results are a great investment for the American taxpayer, returning $8.40 in energy savings for every $1 invested. We believe funding for this initiative should be placed in addition (plus up) in the Energy Efficiency and Renewable Energy (EERE) accounts. We recommend that the Committee give guidance for EERE to spend no less than one-third of the funding on existing residential energy efficiency upgrades. This program was not included in the President's FY2017 Budget Request.

$70 M for State Energy Program. We urge the Committee to provide funding at the level of $70 million for the State Energy Program, which allows states to assist with the development of energy efficiency and renewable energy projects, and support funding a state competitive grant programs with monetary awards to states to use to improve their energy productivity programs.

$230 M for Weatherization Assistance Program. We ask the Committee to return funding to historical levels for the Weatherization Assistance Program, which helps low-income families, seniors, and individuals with disabilities make lasting energy efficiency improvements to their homes. Moreover, Weatherization has a proven track record of creating new jobs and contributing to the economy through the program's large supply chain of vendors, suppliers, and manufacturers

Efficiency First and the Home Performance Coalition believe that energy efficiency is vital to our economic growth and international competitiveness. Again, thank you for providing this opportunity to submit testimony. We would also appreciate the opportunity to brief you or your staff on these important programs and initiatives and the successful energy savings we anticipate they will achieve. We look forward to working with you.

Contact Information
Kara Saul Rinaldi

TESTIMONY OF
GENEVIEVE CULLEN, PRESIDENT
OF THE
ELECTRIC DRIVE TRANSPORTATION ASSOCIATION
SUBMITTED TO THE
ENERGY AND WATER DEVELOPMENT APPROPRIATIONS SUBCOMMITTEE
OF THE
HOUSE APPROPRIATIONS COMMITTEE

MARCH 11, 2016

The Electric Drive Transportation Association (EDTA) is the cross-industry trade association promoting the advancement of electric drive technology and electrified transportation. We are writing regarding FY2017 funding for the Department of Energy's (DOE's) programs that advance electric drive technologies, including the Vehicle Technologies and 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, smart grid and charging infrastructure developers. Collectively, we are committed to realizing the economic, national security, and environmental benefits of displacing oil with electricity in hybrid, plug-in hybrid, battery, and fuel cell electric vehicles.

In 2014, the transportation sector accounted for approximately 27% of the nation's energy use; 92% of that energy came from petroleum fuels. Even with reduced imports, the almost complete reliance of the transportation sector on this one, globally traded commodity undermines our energy and economic security. Diversifying transportation with domestic alternatives will reduce this dependence, while insulating the economy and consumers from price volatility. It will also reduce emissions and advance our competitive position in global energy technology markets.

DOE's Vehicle Technologies program is a critical element of the national effort to address oil dependence, leveraging private sector investments to promote innovation in advanced vehicles and infrastructure and manufacturing chains. The program, including the EV Everywhere Grand Challenge, advances research in batteries and power electronics, electric drive motors and components, and charging technologies. Increased range, reduced costs, and improved performance are battery advances supported by the Battery and Electric Drive Technology subprogram. Critical supporting infrastructure, including wireless charging, systems integration, and codes and standards for communication with the grid are being developed in the Vehicle Systems Simulation & Testing program.

The Vehicle Technologies program is also advancing alternatives in commercial vehicles. Heavy-duty vehicles are projected to experience the fastest increases in energy demand among all transportation modes from 2010 to 2040; Phase II emissions and efficiency regulations for this segment will be finalized later this year. Additional research, demonstration, and deployment of efficiency technologies for combination tractors, heavy-duty pickup trucks and vans, and vocational vehicle technologies' systems and components is needed to achieve the efficiency gains needed in the commercial vehicle fleet.

1250 Eye Street, NW / Suite 902 / Washington, DC 20005 / 202-408-0774 / 202-408-7610 fax / www.electricdrive.org

The SuperTruck II Program is an important part of this effort and we recommend that it eligibility be expanded to include Class7 and Class 8a vehicles, which comprise such a significant part of the commercial fleet. An expanded program should engage partners from across the manufacturing chain, including chassis original equipment manufacturers, intermediate and final stage manufacturers, including hybrid system suppliers, to improve the integration and operation of efficiency equipment in vocational vehicles.

In the Hydrogen and Fuel Cell Technologies program, DOE is working with industry to accelerate the availability of fuel cell electric vehicles, which are essential "zero emission/zero petroleum" options in the alternative fuel transportation portfolio. As fuel cell vehicles are entering the commercial market, hydrogen fueling infrastructure is also being built out to support this emerging market.

We ask that the committee continue its record of support for the program, particularly in vehicle and infrastructure deployment activities and in early market development, including education, validation and enabling activities. At this early market juncture, public/private collaborations, including H2USA (of which EDTA is a member) are especially important in accelerating technology development and infrastructure deployment

Finally, we strongly support DOE's deployment programs, including the Clean Cities program's work with nearly 100 local and regional coalitions to expand deployment of electric drive (hybrid, plug-in hybrid, battery, and fuel cell electric) cars and trucks and recharging/fueling infrastructure as a path to increased energy security. These efforts have a demonstrated record of success, including the cumulative displacement of more than 7.5 billion gallons of petroleum with alternative fuels since the program began in 1993.

The Department's transportation research, development and deployment programs are reducing oil dependence, protecting American consumers from price volatility and increasing U.S. manufacturing competitiveness. We appreciate that, for FY16, Congress provided funding at a level that reflects the importance of those goals. We respectfully request that FY17 funding provide comparable recognition of the Department's essential role in energy economic and environmental security.

We thank you for your consideration.

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Representing Over 125,000 Researchers

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Testimony of the
Federation of American Societies for Experimental Biology
On
FY 2017 Appropriations for the Department of Energy Office of Science
Submitted to the
House Committee on Appropriations
Subcommittee on Energy and Water Development

Representative Mike Simpson, Chairman
Representative Marcy Kaptur, Ranking Member

The Federation of American Societies for Experimental Biology (FASEB) respectfully requests a fiscal year (FY) 2017 appropriation of a minimum of $5.67 billion for the Department of Energy Office of Science. This increase represents a commitment to the critical research supported by the agency, and would preserve the capacity of our National Labs and user facilities.

The American Physiological Society · American Society for Biochemistry and Molecular Biology · American Society for Pharmacology and Experimental Therapeutics · American Society for Investigative Pathology · American Society for Nutrition · The American Association of Immunologists · American Association of Anatomists · The Protein Society · Society for Developmental Biology · American Peptide Society · Association of Biomolecular Resource Facilities · The American Society for Bone and Mineral Research · American Society for Clinical Investigation · Society for the Study of Reproduction · The Teratology Society · The Endocrine Society · The American Society of Human Genetics · International Society for Computational Biology · American College of Sports Medicine · Biomedical Engineering Society · Genetics Society of America · American Federation for Medical Research · The Histochemical Society · Society for Pediatric Research · Society for Glycobiology · Association for Molecular Pathology · Society for Redox Biology and Medicine · Society For Experimental Biology and Medicine · American Aging Association (AGE) · U. S. Human Proteome Organization (US HUPO)

The Federation of American Societies for Experimental Biology (FASEB) is composed of 30 societies with 125,000 members, making it the largest coalition of biomedical research associations in the United States. FASEB enhances the ability of scientists and engineers to improve health, well-being, and productivity through research and is recognized as the policy voice of biological and biomedical researchers.

The Department of Energy Office of Science (DOE SC) is the lead federal sponsor of fundamental energy research and the largest supporter of basic physical sciences research. DOE SC awards competitive, merit-based grants to researchers in all 50 states and at more than 300 universities. The Office of Science also operates ten of the seventeen world-class National Laboratories, and manages state-of-the-art facilities used by more than 31,000 scientists and engineers annually.[1] These laboratories develop unique, multidisciplinary scientific capabilities that are beyond the scope of individual academic and industrial institutions. Researchers supported by DOE SC have been awarded 115 Nobel Prizes.[2]

The entire research community benefits from the unmatched scientific and technological instrumentation maintained by DOE SC, such as supercomputers, x-ray light sources, colliders, and particle accelerators. Scientific user facilities for nanoscience, plasma science, genomic sequencing, and microbiology administered by DOE SC are among the most advanced tools of modern science, enabling researchers to explore a wide range of basic questions and areas of inquiry. Discoveries made possible by such technologies improve health, spur economic growth, and support a secure and sustainable energy future. Over forty Fortune 500 companies and dozens of small businesses rely on having access to DOE SC facilities each year.

Research funded by DOE SC revealed new knowledge about the effects of radiation providing data necessary to determine standards for protecting individuals from excessive exposure. Other studies using radioisotopes led to critical discoveries in medical diagnostic techniques and expanded clinical capabilities. Advanced computing systems and unique resources supported by DOE SC enabled a broad array of technological innovation, including the development and construction of accelerator-based x-ray synchrotron light sources, particle colliders and detectors, and fusion energy experiments. Scientific breakthroughs related to solar energy, bioenergy, chemistry, and materials science have also been shaped by DOE SC research.

Examples of DOE SC-funded research include:

- **Biochemistry and Toxic Metal Detection:** Metal pollution is a serious threat to environmental health. To enable better detection of toxic metals, researchers at Oak Ridge National Laboratory have developed a novel method for labeling molecules found in bacterial cells and naturally occurring organic matter that bind to these metals. By measuring the presence of metal-binding compounds in this new way, scientists will be able to study and quantify the distribution of metallic pollutants in the environment and design better management strategies.[3]

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[1] http://science.energy.gov/~/media/budget/pdf/sc-budget-request-to-congress/fy-2016/FY_2016_Office_of_Science-Overview.pdf
[2] http://science.energy.gov/about/honors-and-awards/doe-nobel-laureates/
[3] http://science.energy.gov/ber/highlights/2014/ber-2014-12-a/

- **Directed Evolution of Enzymes for Biofuel Synthesis**: Directed molecular evolution is a powerful technique by which biochemists can generate molecules based on their specific chemical properties. Using this approach, researchers from the University of Minnesota have managed to synthesize an active enzyme for stitching RNA molecules together after starting with inactive precursors. This proof-of-principle experiment for the design of commercially useful enzymes was made possible through the use of the Stanford Synchrotron Light Source (a DOE user facility) to test the properties of the newly synthesized molecules.[4]

- **Biochemistry of Antibiotic Synthesis**: Through a collaborative effort between Argonne National Laboratory, the Scripps Research Institute, and Rice University, scientists have been begun to dissect the complex molecular pathways used by certain bacteria to synthesize antimicrobials and other important biochemical compounds. Enabled by the cutting-edge technological resources at Argonne's Advanced Protein Characterization Facility, the research team has been able to glean information that may lead to the development of more effective antibacterial, antiviral, and antitumor pharmaceuticals.[5]

- **Genetics of Wood Formation for Biofuel Production**: Wood is perhaps the most ancient source of renewable building material and fuel. Funded by the Department of Energy Genomic Science program, researchers at North Carolina State University developed a novel approach to understand the molecular biology of wood formation in poplar trees. The techniques developed by this team have applications in the study of other plants that are hard to manipulate experimentally, and the insights gained can be used to help boost productivity of important bioenergy crops.[6]

- **New Cell-Culture Assay for Carcinogen Screening**: Scientists at Lawrence Berkeley National Laboratory have developed a new cell-culture technique for the screening of potentially carcinogenic chemicals. By starting with a collection of adult stem-cells, the researchers have been able to generate an artificial matrix of specialized cells that more closely resemble the complex structure of an actual organ. When this matrix is exposed to different chemicals, the scientists can more accurately detect the tell-tale signs of cancerous growth. This new technique will thus aid in the safety testing of a wide-range of chemical agents.[7]

Maintaining Our Leadership in Fundamental Energy Research

The physical, chemical, biological, and computational research supported by DOE SC provides the foundation for fundamental discovery that has contributed to the development of new technologies and industries that have made the U.S a leader in science and innovation.

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[4] http://science.energy.gov/ber/highlights/2014/ber-2014-07-aa/
[5] http://www.anl.gov/articles/new-information-about-bacterial-enzymes-help-scientists-develop-more-effective-antibiotics
[6] http://science.energy.gov/ber/highlights/2015/ber-2015-03-e/
[7] http://newscenter.lbl.gov/2015/06/24/screen-chemicals-cancer/

Sustainable funding DOE SC will transform our understanding of nature and strengthen our national security.

Increased investment will also allow DOE SC to upgrade the infrastructure of the national labs. The number of users accessing the DOE SC labs increased by nearly 20 percent from FY 2011 to FY 2016. These facilities provide the academic, business, and industrial communities with access to some of the most advanced scientific instruments in the world. Resources are required to upgrade existing facilities and plan for the acquisition of new equipment needed for changing national priorities and scientific opportunities. Funds are needed for critical deferred repairs on existing machinery and replacement of outdated instruments. Additional budget growth would support the expansion of high priority research activities including new accelerators, and the development of advanced detector and optics instrumentation.

Increasing the DOE SC budget to $5.67 billion (approximately $325 million above FY 2016 levels) would allow the agency to fund nearly 100 additional research grants. In addition, these funds would help DOE SC acquire cutting edge equipment and support operations at the national labs and user facilities at near optimal levels.

To promote sustainable growth, FASEB recommends a minimum of $5.67 billion for DOE SC in FY 2017. This increase represents a commitment to the critical research supported by the agency and would preserve the capacity of our National Labs and user facilities.

Thank you for the opportunity to offer our support and recommendations for the DOE SC.

TESTIMONY OF THE ASSINIBOINE AND SIOUX TRIBES OF THE FORT PECK RESERVATION AND DRY PRAIRIE RURAL WATER BEFORE THE HOUSE ENERGY AND WATER DEVELOPMENT SUBCOMMITTEE ON APPROPRIATIONS REGARDING FY2017 BUREAU OF RECLAMATION FUNDING

March 7, 2016

Fort Peck Reservation Rural Water System (P.L. 106-382)
Assiniboine and Sioux Rural Water System
Dry Prairie Rural Water System

1. FY 2017 Budget Request

The Fort Peck Assiniboine and Sioux Tribes and the Dry Prairie Rural Water greatly appreciate the $16 million in construction funding to the Bureau of Reclamation (BOR) in FY 2016 which permits us to continue the construction of the Fort Peck Reservation Rural Water System. When completed, the system will serve an estimated 30,000 northeast Montana residents with clean, safe, reliable and adequate municipal, rural, and industrial water supplies that will improve the health and economy of our region. All costs of the Reservation system are a federal responsibility and the federal cost of the Dry Prairie System is 76 percent. The Project will be 57% complete by the end of FY 2016. Without additional construction funds, the estimated cost to complete the Project build-out will only increase.

To save taxpayer dollars, we respectfully request FY 2017 appropriations of $29 million for this project so that BOR construction funding can match our actual construction need. If Congress were to appropriate this level of funding for the Project over the next few years, it will permit us to complete construction by 2020. Funding of this level will create an estimated 87 full-time equivalent (FTE) construction jobs in a remote area of Montana with low per capita income, high unemployment and high under-employment (based on 3 FTE's per $1 million).

2. Proposed Activities

Our FY 2017 request of $29 million is near the average annual appropriations needed to complete the project in FY 2020 and is urgently needed to properly utilize the newly completed water treatment plant and distribute high quality water to all communities along the main transmission line within the Fort Peck Indian Reservation and to Dry Prairie service areas. Last year the parties achieved the important milestone of "interconnecting" the two rural water systems as required under the authorizing statute.

With $29 million in FY 2017 funds, on the Reservation, we will:

- add improvements at the Eagle Shield Water Treatment Plant to facilitate removal of natural silt and turbidity carried by the Missouri River;
- complete about 50% of the main pipeline from north to south across the Fort Peck Indian Reservation to Dry Prairie's connection to Scobey, the third and last connection to Dry Prairie;
- complete about 10% of the Reservation's distribution system along the main pipeline from north to south across the Fort Peck Indian Reservation;
- complete construction of the booster pumping station and new reservoir on the Frazer to Porcupine Creek main pipeline;
- continue to serve all Reservation communities and all rural homes within the first pressure zone along the main transmission throughout the Reservation and to add rural homes; and
- further facilitate increased delivery of water within the Reservation and outside the Reservation to improve water quality and operation by reducing flushing that wastes water and money, reducing disinfection requirements and costs and reducing potential for formation of carcinogenic disinfectant by-products.

Within the area served by Dry Prairie (DPRWS), we will:

- continue the East Medicine Lake Project south of Plentywood;
- initiate construction of pipeline from northern boundary of Reservation to Scobey, from the third and last connection to the ASRWS regional water treatment plant;
- begin connection from Nashua to Glasgow, the latter is the largest community in the project with 10% of population; and
- complete the booster pump station needed in Valley County.

3. President's Rural Water Construction Budget is Inadequate

Unfortunately, the President's FY 2017 budget has reduced construction funding for the rural water program from a high of $51.5 million in FY 2013 to less than $20 million in recent year. These rural water projects are meeting a basic drinking water need of highest importance to the health and welfare of the people served. The Administration has shifted the funding burden to Congress to supplement the President's annual budget. Congress has stepped forward and has consistently added funds bringing last year's funding to $65.546 million. See Table 1.

TABLE 1

HISTORY OF CONSTRUCTION FUNDING BUDGETED BY THE ADMINISTRATION AND SUPPLEMENTED BY CONGRESS

		Construction Funding (millions)				
Project	Region	FY2013	FY2014	FY2015	FY2016	FY2017
President's Budget						
Mni Wiconi Project	GP	$35,200	$12,000	$12,000	$12,000	
Non-construction OMR		-12,200	-12,000	-12,000	-12,000	
Pick-Sloan Missouri Basin Program-	GP	15,900	14,492	12,296	13,400	
Non-construction OMR		-5,800	-5,800	-5,800	-6,000	
Rocky Boy's/North Central MT Rural Water System	GP	4,000	5,400	4,059	4,625	
Fort Peck Reservation / Dry Prairie Rural Water System	GP	**7,500**	**4,300**	**3,249**	**3,700**	
Jicarilla Apache Rural Water System	UC	500	0	0	0	
Lewis and Clark Rural Water System	GP	4,500	3,200	2,432	2,774	
Eastern New Mexico Water Supply - Ute Reservoir	UC	1,978	649	47	47	
Rural Water Programs - Total		$51,578	$22,241	$16,283	**$18,546**	$0
Congressional Addition		$0	$27,098	$31,000	**$47,000**	
Requested for Rural Water Program Construction						$50,000
Enacted Funding		$51,578	$49,339	$47,283	**$65,546**	
Requested for Rural Water Program Construction						$50,000

Without Congress adding additional funding for rural water program construction needs, appropriations for ongoing rural water projects would have decreased in FY 2016 by more than 60% from FY 2013 enacted levels. With respect to the Fort Peck Reservation Rural Water System Project, Congress has twice acted to extend the Project completion date due to inadequate federal funding in annual appropriations for BOR construction needs.

As detailed in Table 2 below, we request $15.824 million for the Assiniboine and Sioux Rural Water System (ASRWS) and $13.128 million for the Dry Prairie Rural Water System (DPRWS) to meet our FY 2017 construction needs. The requested total of approximately $29 million is near the *average* annual funding needed to complete the two systems in 2020, the year scheduled for completion for the Fort Peck Reservation Rural Water System by the Consolidated Appropriations Act, 2014, PL 113-76, Division D, Title II, Sec. 209. See Table 2.

Our request is fully within our capability to spend in FY 2017. Design and cultural resource surveys of all proposed project features will be completed by the Tribes and Dry Prairie and approved by Reclamation in 2016 in advance of the use of FY 2017 funds. The Tribes and Dry Prairie have worked extremely well and closely with BOR officials since the authorization of the project in FY 2000. The Commissioner, Regional and Area Office of the Bureau of Reclamation have been consistently in full agreement with the need, scope, total costs, and the ability to pay analysis that supported the federal and non-federal cost shares. We are grateful to the Regional Director and Commissioner for their assistance in allocating available BOR construction funds which have made possible the building of the 30,000 square foot water treatment plant and pipelines serving the largest communities on the Reservation. There have been no areas of disagreement in the formulation or implementation of the Project.

TABLE 2

FY 2017 FUNDING REQUEST
FORT PECK RESERVATION RURAL WATER SYSTEM (PL 106-382)

Sponsor Project Feature	Federal	Non-Federal	Total
Fort Peck Tribes			
2016 Treatment Plant Improvements	$2,991,000	$0	$2,991,000
US 2 North to Reservation Boundary Main Branch	7,295,000	0	7,295,000
US 2 North to Reservation Boundary Secondary Branches	1,510,000	0	1,510,000
Frazer to Porcupine Creek (2017 Booster and Reservoir)	2,126,000	0	2,126,000
Service Connections	538,000	0	538,000
FP Electrical, Meters, Easements	1,364,000	0	1,364,000
Subtotal	$15,824,000	$0	$15,824,000
Dry Prairie (Main Transmission Pipelines and Branches)			
E Medicine Lake	$1,572,000	$125,000	$1,697,000
FP Boundary to Scobey	8,750,000	698,000	9,448,000
Nashua to Glasgow	1,469,000	117,000	1,586,000
VC Area F, BPS & Reservoir	642,000	51,000	693,000
DP Electrical, SCADA, Meters, Easements	695,000	55,000	750,000
Subtotal	$13,128,000	$1,048,000	$14,174,000
Total	$28,952,000	$1,048,000	$29,998,000

Our Project will be 57% complete at the end of FY 2016, with combined spending totaling $173.1 million by that time within the authorized federal spending level of approximately $300 million. ASRWS will be 65% complete, and DPRWS will be 40% complete. The Assiniboine and Sioux Tribes have built the regional intake, water treatment plant and 2 of the 3 main transmission pipelines that serve both the Tribes and Dry Prairie. The building of the regional construction features accounts for the differences in the percentage of completion between the Tribes and Dry Prairie.

Construction funds remaining to be spent after FY 2016 total approximately $128 million within the current authorization (in October 2015 dollars). The project is currently under budget by $2 million and can be completed within the *authorized* construction ceiling if appropriations are adequate to complete construction by 2020. Inflation at 1.294% over the 5 years prior to 2020 (average over last 5 years) will increase remaining project costs to $133 million or $5 million more than the authorized construction ceiling in today's dollars. Our request would complete the project in 2020 in today's dollars including future inflation. Continued Congressional support is needed for the Reclamation Rural Water Program to complete the currently authorized projects in a timelier manner *to avoid the erosion of construction capability* as fixed, annual overhead costs reduce authorized construction funds because the project is required to build significantly longer than anticipated at authorization in the year 2000.

We urge the Subcommittee to address the problem of inadequate budgeting of *currently authorized projects* in the Rural Water Program that are well advanced in construction to avoid unbudgeted annual overhead costs and inflation. Thank you for affording us this opportunity.

Written testimony from the Executive Committees of the High Energy Physics Users Organizations and the American Physical Society's Division of Particles and Fields to the US House of Representatives Appropriations Committee, Subcommittee on Energy and Water Development in support of the Department of Energy's Office of Science

We urge the House of Representatives to provide $833M in the FY 2017 Energy and Water Appropriations bill for the Department of Energy Office of High Energy Physics (DOE-OHEP) within the DOE Office of Science. That funding level is $15 M above the Administration's request, for reasons explained below. High Energy physics research is a key part of the DOE Office of Science, and yields valuable benefits to our nation. We are the Executive Committees of the Users Organization of the Fermi National Accelerator Laboratory[1] (Fermilab), located outside of Chicago, Illinois; the U.S. LHC Users Association[2]; and the American Physical Society's Division of Particles and Fields[3]. We represent the over 3,500 scientists who perform research at Fermilab, the US' premier particle-physics laboratory; at the Large Hadron Collider (LHC) at CERN in Geneva Switzerland; at the SLAC National Accelerator Laboratory; on cosmic and astrophysical experiments located around the world; and the theoretical physicists who develop the underlying ideas. Our field studies the particles that are the building blocks of the universe, and how they come together to create the cosmos and influence its evolution. Much of the technology we have invented to facilitate these studies, such as the World Wide Web, has proved to be extremely beneficial to our society as a whole.

The US Department of Energy (DOE) Office of Science and the National Science Foundation support high energy physics research at US national laboratories and universities. **More than 190 US institutions in 42 states host physicists, astrophysicists, engineers, students and accelerator scientists who work in high energy physics.** More than half of these institutions are funded through the DOE Office of Science.

Our field is international by its nature, since no single nation can afford to carry out the full fundamental physics research program. We are working with our international partners to build a worldwide program, where complementary, unique world-leading facilities will exist in the United States, in Europe and in Asia.

To maintain US leadership in Particle Physics and develop a US HEP Community-wide vision of our future, the US HEP community undertook a thorough self-study from 2011-2014, that culminated with the P5 committee. The P5 report, which was strongly supported by the HEP community, presented a path forward for the US particle physics program. Fermilab is now the sole HEP accelerator laboratory in the US.

The P5 plan is now being executed. It is based on three pillars: continued US involvement in the LHC; hosting an international long baseline neutrino program called

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[1] ***The Fermilab Users Executive Committee:*** *Minerba Betancourt (Fermilab), Fernanda G. Garcia (Fermilab), Fabio Happacher (INFN Frascati, Italy), Georgia Karagiorgi (U. Manchester), Ed Kearns (Boston U), Sarah Lockwitz (Fermilab), Bill Louis (Chair, LANL), Jesus Orduna (Brown U.) Eric Prebys (Fermilab), Linda Spentzouris (IIT), Thomas Strauss (Fermilab), Louise Suter (ANL).*

[2] ***US LHC Users Executive Committee:*** *Darin Acosta (U. Florida), Jahred Adelman (Northern Illinois), Usha Mallik (U Iowa), Jessica Metcalfe (ANL), David W. Miller (U. Chicago), Corrinne Mills (U Edinburgh), Christine Nattrass (U. Tennesee), Harvey Newman (Chair, Caltech), Verena Martinez Outschoorn (U. Illinois), Gordon Watts (U Washington), Toyoko Orimoto (Northeastern U), Sheldon Stone (Syracuse U), Julia Thom (Cornell U).*

[3]***DPF Executive Committee:*** *Marcela Carena (Fermilab), Mirjam Cvetic (U Penn),, Robin Erbacher (UC Davis), Nicholas Hadley (U. Maryland),), Karsten Heeger (Yale U), Joanne Hewett (Chair SLAC) Joseph Incandela (UC Santa Barbara), Aida El-Khadra (U Illinois), Joshua Klein (U. Penn), Kate Scholberg (Duke), Laura Reina (Florida State U), Louse Suter (ANL), Philip Michael Tuts (Columbia U).*

LBNF/DUNE at Fermilab and at the Sanford Underground Research Facility (SURF); and a set of experiments on dark matter and dark energy. This robust long-term program, which will guarantee continued US leadership in high energy physics, requires that we:

1) Continue our leadership in the Large Hadron Collider program at CERN. More than 1,700 scientists from 94 US institutions are participating in the new run of the LHC that began last year, and are playing leading roles preparing for major planned upgrades of the experiments and the accelerator. Meeting our commitments in the present program and in the near- and longer-term upgrades, which is the highest priority in the P5 Report, will ensure a reciprocal investment by Europe and CERN in the US program on long baseline neutrinos. The *bilateral* agreement signed by CERN and the DOE in May 2015 provides a new, strong foundation for this reciprocity, based US contributions to the LHC program, and corresponding new commitments by CERN and other international partners to the US HEP program.

2) Build LBNF/DUNE: The LBNF/DUNE project, led by Fermilab, which already has more than 800 scientists from 27 countries and 146 institutions from around the world, is ready to begin construction in FY 2017. The LBNF/DUNE experiment will provide the US with a leadership platform in particle physics for the next 20-30 years. A slip in schedule for US supported prototype work at CERN will cause CERN to lose confidence and would likely delay or result in the loss of additional investments from CERN, the UK, Italy and Switzerland. The $10M above the President's budget request for the LBNF/DUNE project will demonstrate to our international partners that the US can keep the planned schedule for building the prototype detectors to be tested at CERN.

3) Participate in and build a suite of dark matter and dark energy experiments: The US has leadership in this area, but competition is fierce from other countries because of the smaller cost to engage in this science. The request of $5M above the President's request for dark matter and dark energy projects will keep these projects on schedule. For example, an increase in funding for the LZ project in the SURF facility in South Dakota will save one year on the LZ construction schedule and reduce the final cost by $4M, and demonstrate the US commitment to our international partners.

The quest to understand the composition of our universe, especially the dark matter that modifies the motion of stars in galaxies and the dark energy that appears to be driving the expansion of the universe, is also part of our field. Three important experiments with significant participation from high energy physicists are: the Dark Energy Survey, using the Dark Energy Camera built at Fermilab; the Large Synoptic Survey Telescope whose camera is being built at SLAC; and the Large Area Telescope on the Fermi Gamma Ray Space Telescope spacecraft, which was funded by the DOE, NASA and foreign partners. High energy physicists are also searching for evidence of dark matter particles in underground laboratories, most notably in the LZ experiment at SURF, where the detectors are shielded from cosmic radiation by their depth. .

The Office of High Energy Physics has also been tasked with the stewardship of the continued development of particle accelerator science. While particle accelerators were invented by particle physicists, today there are more than 30,000 particle accelerators throughout the world, with only a handful dedicated to high energy physics. Computers, cell phones, car engine wiring, shrink-wrap plastic, cancer treatment and the production of medical isotopes for diagnosis all depend on this key technology sector. Beams from a specialized electron accelerator can be used to sterilize medical materials or foods. The beam of electrons eliminates dangerous microbes without damaging equipment or packaging, without the use of harmful chemicals, making a more efficient and more environmentally friendly method of sterilization.

The tire industry now uses particle accelerators to treat their tires, substantially reducing the amount of rubber and chemicals used in the production process.

After its HEP program was completed, the SLAC accelerator facility has been transformed into LCLS-I, a powerful x-ray free-electron-laser light source that enables new studies such as those in structural biology and materials science. This transition provides an excellent example of the importance of accelerator science to our society, whose stewardship resides in DOE-OHEP. Advancements in structural biology at light sources can lead to new pharmaceuticals. This is a perfect example of the broader importance of HEP-developed accelerator technology as an important new tool for the Basic Energy Sciences community in the DOE Office of Science. A new, more powerful machine, LCLS-II, is under construction at SLAC, which will employ superconducting radio frequency technology developed by the HEP community, thus demonstrating how society as a whole benefits directly from the development of new accelerator techniques that push the state-of-the-art in accelerator design.

Value of High Energy Physics Research

In our modern economy, science and technology (S&T) drive growth, as detailed in the 2010 National Academies' report, *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 nation's economic growth, national security, and overall scientific position in the world community. Innovation by a highly trained workforce is the key.

Technological developments within the US will drive our economy so we can maintain our international economic and technological leadership. Revolutionary technologies require revolutions in our fundamental knowledge and understanding, and are invented in the course of research activities of our most talented minds in pursuit of testing, measuring, and understanding new ideas and concepts. No one could have predicted the nature of our present society from the first studies of electrons at the dawn of the 20th century; however, without these pioneering studies we would not be communicating via email, cellphone, or text messages, nor could we use GPS. Revolutionary technologies arise from new ways of thinking about society's problems, often derived from 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 our continuing quest 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

Our high energy physics discovery science demands the development of new technologies to accomplish our goals. The World Wide Web, first developed by high energy physicists, now underpins commerce, social media, and the communication tools that we rely on today. Our researchers spend a significant part of their careers advancing high-tech particle detectors, developing complex computing algorithms and processing one of the largest volumes of Big Data on the grid, and pushing the limits of high-speed electronics. Once these advances are made, they are adopted in fields as diverse as medicine, materials research, and manufacturing.

The camera built for the Dark Energy Survey, led by Fermilab physicists, and the one being built for the Large Synoptic Survey Telescope, led by SLAC physicists, are pushing the limits of today's technology. These new technologies will ultimately influence the digital

cameras available at your local electronics store as well as devices no one has yet imagnied. An ongoing R&D effort by a university/national laboratory collaboration is inventing new, cost-effective particle detectors with the unique power to resolve events on the trillionth-of-a-second time-scale. These detectors will also doubtless lead to new industrial, research, and medical applications

Value of Science Education

Our researchers are engaged in education at all levels and understand the importance of scientific literacy in our society. The US 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 unique research opportunities. Numerous students from foreign institutions travel to Fermilab to complete their Ph.D. thesis research. Many of them choose to stay in the US afterwards, working in a range of fields. **Over 90% of the young scientists who were trained in our high energy physics experiments now work in telecommunications, software development, aerospace, education, medicine, government, and finance, to name a few.** Having been trained to work effectively in large teams (20 to 3000 scientists) that are international in composition, with strongly developed technical and problem solving skills in computing, electronics, data management and analysis, along with computer simulation of complex problems, they become valuable members in our technical, medical, and financial sectors. They learn leadership skills, how to take a project from start to finish, how to write a document detailing their work and present it to an audience. The complex analytical thinking needed to solve problems in fundamental science cannot be taught in a classroom alone, but is nonetheless crucial for solving problems in business and industry in the 21st century.

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. These include Bill Graves, the first CEO of Cisco Systems, a pioneer in computer networking and one of the Global Top 100 companies based on capitalization; Richard Wellner, chief scientist at Univa UD, a cloud management software company; Francisco Vaca, CEO of Vaca Capital Management LLC; George Coutrakon, now Technical Director of the Northern Illinois Proton Treatment and Research Center; Homaira Akbair, former CEO of SkyBitz, a satellite-based tracking company; Nagesh Kulkarni, CEO of Quarkonics Applied Research Corp.; and James Simons founder of Renaissance Technologies.

Summary:

Scientific research in general, and high energy physics in particular, provides value to our nation. That value will be lost without sustained funding from the US government. The knowledge gained doing this research will lead to future innovation that will maintain our world-class scientific capabilities. The path to that knowledge will lead to advances in technology and help sustain our economic recovery. The education of students from the US 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. High Energy Physics has played a central role in training scientists, and in developing instruments and technology that have significantly benefitted society as a whole. Our field has put in place an exciting long-range plan that guarantees world-leading science in the US focused on muons, neutrinos, and dark matter, as well as continued leadership in the important experiments at the energy frontier at the LHC. We urge the House Appropriations Subcommittee on Energy and Water Development to support the DOE Office of Science's Office of High Energy Physics at the $833 M level in FY2017.

Testimony Submitted by the Izaak Walton League of America

Subcommittee on Energy and Water Development

U.S. Army Corps of Engineers, Operations and Maintenance, Missouri River

The Izaak Walton League of America appreciates this opportunity to provide testimony concerning the FY 2017 budget proposed by the U.S. Army Corps of Engineers. We respectfully urge the Subcommittee to appropriate, at a minimum, $18 million in FY 2017 for the Missouri River Recovery Program as requested in the budget. We also urge the Subcommittee to provide $ 3 million for operations and maintenance of existing habitat recovery projects on the lower Missouri River as outlined in the request.

We were greatly disappointed by the amount requested by the Army Corps of Engineers for this important program. However, we understand this historically low request is due to the ongoing work on the new Missouri River Recovery Management Plan and the Environmental Assessment on the Yellowstone River Intake Project in northeastern Montana.

We know both of these are unique and extenuating circumstances. The League urges the Subcommittee to restore full capability funding to the Corps, the U.S. Fish and Wildlife Service, Bureau of Reclamation, the cooperating state agencies, and other partners when the new Missouri River Recovery Management Plan is completed and a decision is made on the Intake Project. Future robust funding is essential so the agencies can continue crucial habitat restoration efforts that are producing long-term ecological and economic benefits.

The Missouri River basin encompasses land in 10 states covering one-sixth of the continental United States. The Missouri is America's longest river. It's also one of the most altered ecosystems on earth. While recovery and restoration efforts have been ongoing, we believe much more needs to be done. League members, especially those in Iowa, Nebraska and South Dakota, want to see the recovery efforts continue and expand.

The Corps, Fish and Wildlife Service, and many state fish and wildlife agencies have been working on restoring habitat for fish and wildlife along the river. This crucial work benefits the federally listed species: the pallid sturgeon, least tern and the piping plover. However, habitat restoration efforts also have tremendously positive impacts on all fish and wildlife throughout the region.

U.S. Fish and Wildlife Service studies show over twice as many fish species utilize the created shallow water habitat (SWH) in the lower Missouri River when compared with the highly altered main channel. A Corps' study shows emergent sandbar habitat (ESH) projects have had tremendous response from nesting terns and plovers. These habitat restoration projects work with the river - not against it.

These habitat restoration projects have also been a boon for outdoor recreation and the economy throughout the region. Thousands of anglers, hunters, boaters, birdwatchers, and many others use these areas proving the old adage "if you build it, they will come." A report done by the Missouri Department of Conservation and the Nebraska Game and Parks Commission showed that recreational spending provides a $68 million annual impact to areas along the lower Missouri River below Gavins Point Dam near Yankton, SD to the mouth near St. Louis, MO.

A South Dakota Game, Fish, and Parks study showed that recreational benefits on the Missouri River account for over $107 million in annual economic impact in the Dakotas and Montana. These projects bring more people to the river throughout the Missouri basin. That's good for the local economies and local, state and regional businesses.

In addition to the economic boost to the recreation industry, restoration projects also provide other economic benefits throughout the entire region. To perform the habitat creation work, the Corps contracts with local construction companies. This creates jobs and injects dollars into local economies through purchases of materials, fuel, food and lodging. With adequate funding, the Corps could readily implement more of these important economic and ecological restoration projects along the river.

The benchmarks established in the Missouri River Biological Opinion have goals for habitat restoration. With sufficient funding, and hard work on the ground, these habitat goals will be met and restoration of critical segments of America's longest river will occur.

Every year through research and monitoring more and more is learned about what is needed for successful recovery and restoration of the river. Biologists and engineers are making these projects do more for more species than ever before. It's been said that the 1944 Flood Control Act didn't come with a repair manual, but now even long-time Corps employees say they are more optimistic about recovery for the Missouri River than they have ever been.

The Izaak Walton League appreciates this opportunity to submit testimony and we look forward to working with the Subcommittee to strengthen the investment in ecosystem restoration and recovery along the Missouri River. Progress is happening and with continued future robust funding much more can be achieved.

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THE LITTLE RIVER DRAINAGE DISTRICT

FLOOD CONTROL & DRAINAGE
SINCE — 1907

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Statement of
Dr. Sam M. Hunter, President
The Little River Drainage District

March 15, 2016

HOUSE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
U.S. Army Corps of Engineers, Civil Works, Mississippi River and Tributaries

My name is Sam M. Hunter, D.V.M. I am a veterinarian, landowner, and farmer, and I reside in Sikeston, Missouri. I am 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.

We represent the voices of land owners, farmers, state entities, cities and counties that are clearly articulated in resolutions that have been signed from eight states. The following link is for 24 resolutions that describe protection for more than 10 million acres. They are listed at the end of this document:
https://www.dropbox.com/sh/fjwf51ylglzc0c/AADF4j_6bx27xE3vwGtKWHyxa?dl=0

The people represent hundreds of partners and thousands of people that live along the magical Mississippi River and enjoy protection and the productivity of the world envied Commerce and Flood Control System. The Little River Drainage District (LRDD) requests FY17 Mississippi River and Tributaries (MR&T) Appropriations in the amount of <u>$500 million per year</u> and an infrastructure re-investment amount of <u>$2 billion</u> following the 2015 Record setting Christmas Flood. We remind you and our nation of the MR&T's exceptional system performance in 2008, 2011, 2012 (drought), and the 2015 Floods AND the other high and low water events for 88 years. The investment by the MR&T system in preparation for the 2011 flood ... resulted in more than $246 billion worth of damages prevented by the MR&T system ... a return on federal investment of over 46 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 low water experienced throughout the Mississippi River in 2012-2013.

Considerations:

- the unrelenting Christmas storm systems that caused the greatest flooding on record in the Middle Mississippi River Basin and near record flooding in the Lower Mississippi River Basin; and
- the value of the agricultural products and the large agribusiness industry in the Mississippi River Basin produces ninety-two (92) percent of the nation's agricultural exports, seventy-eight (78) percent of the world's exports in feed grains and soybeans, and most of the livestock and hogs produced nationally; and
- sixty (60) percent of all grain exported from the United States is shipped via the Mississippi River from ports throughout the region, down to the Port of New Orleans and the Port of South Louisiana; and
- navigation on the Mississippi River carries the vast amount of vital products: coal, fertilizer, cement, gravel and salt, among others, which are the building blocks of our nation's economy; and
- the Mississippi River and Tributaries Project, the nation's most successful comprehensive flood control and navigation project provides protection for more than four million people that live in the Lower Mississippi Valley, impacts people in half the USA and since its creation in 1928, has saved thousands of lives, communities, and more than half a trillion dollars in property damage and loss; and
- the Mississippi River and Tributaries Project is one of the most successful civil works projects and the wisest public works investment our country has made, protecting more than $250 billion dollars in assets; and
- beyond its flood control protection, the Mississippi River and Tributaries Project provides benefits crucial to the Mississippi Valley region, including stable drinking water supplies, power generation, navigation and commerce, economic development and recreation; and
- as a result of the historic floods of 2008, 2011, and 2015-2016, the Mississippi River and Tributaries Project has been compromised; and
- failing to complete and recover the comprehensive flood control project, experiencing a failure in the system or failing to restore the system in time for the next high-water event would be devastating to our nation's economy and quality of life; and
- the United States Congress has the authority to prioritize and supply funding to the U. S. Army Corps of Engineers and other federal and state agencies so that

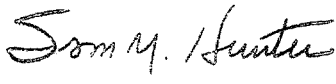
those devastated by flooding can reliably produce, rebuild and restore their lives and livelihood; to approve and fund a comprehensive flood control and navigation project for the upper Mississippi River Basin to protect people and property; to pass legislation providing the authority to streamline the burdensome regulatory process to ensure federal funds are used for the primary objective of high value projects, not permits and studies.

Statement for the Appropriations Committee:

The Little River Drainage District supports the passage of supplemental appropriations in the amount of 2 billion dollars to repair flood damage to the system and infrastructure; yearly funding in the amount of 500 million dollars per year for continued maintenance of the Mississippi River and Tributaries Project; the passage of comprehensive flood control for the upper Mississippi River Basin to provide economic reliability and to protect people and property throughout the entire Mississippi River Valley; and

The Little River Drainage District supports passage of federal legislation providing local levee and drainage districts in conjunction with the U.S. Army Corps of Engineers and the Mississippi River Commission the authority to streamline the burdensome regulatory and environmental processes to ensure federal dollars are spent on projects to protect people and property.

Signed this 15th day of March, 2016 representing The Little River Drainage District.



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

List of Signed Resolutions:

1. THE LITTLE RIVER DRAINAGE DISTRICT, MO
2. MISSISSIPPI VALLEY FLOOD CONTROL ASSOCIATION
3. MISSOURI LEVEE & DRAINAGE DISTRICT ASSOCIATION
4. UPPER MISSISSIPPI, ILLINOIS, & MISSOURI RIVERS ASSOCIATION (IA, IL, MO)
5. ST. FRANCIS LEVEE DISTRICT OF MISSOURI

6. Sny Island Levee Drainage District, IL
7. Big Island River Conservancy District, IL
8. St. Francis Levee District of Arkansas
9. Mississippi Levee Board
10. Yazoo-Mississippi Delta Levee Board, MS
11. Tensas Levee District, LA
12. South Quincy Drainage and Levee District, IL
13. New Madrid County Port Authority, MO
14. Pemiscot County Port Authority, MO
15. Levee District #2 of Scott County Missouri
16. Elk Chute Drainage District of Missouri
17. Southeast Arkansas Levee District
18. Southeast Missouri Regional Port Authority
19. Fifth Louisiana Levee District, LA
20. International Port of Memphis, TN
21. Consolidated Drainage District Number One, MO
22. Fulton County Levee Board of Kentucky
23. Hickman-Fulton County Riverport Authority, KY
24. City of Memphis Proclamation, TN

**TESTIMONY OF JEFFREY KIGHTLINGER, GENERAL MANAGER,
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA**

**BEFORE THE UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT,
AND RELATED AGENCIES**

**ON CONTINUED FISCAL YEAR 2017 FUNDING FOR THE
COLORADO RIVER BASIN SALINITY CONTROL PROGRAM,
TITLE II – BASINWIDE PROGRAM**

MARCH 15, 2016

CHAIRMAN SIMPSON, RANKING MEMBER KAPTUR, AND MEMBERS OF THE SUBCOMMITTEE:

The Metropolitan Water District of Southern California (Metropolitan) encourages the Subcommittee's support for fiscal year 2017 federal funding of **$10.3 million** for the U.S. Bureau of Reclamation's (Reclamation) Colorado River Basin Salinity Control Program (Salinity Control Program), Title II – Basinwide Program to prevent further degradation of Colorado River water quality and increased economic damages.

The salt concentration in the Colorado River causes over $300 million in damages to water users each year. While this figure is significant, had it not been for the efforts of the Salinity Control Program, damages would be much higher. Salinity Control Program actions have reduced salinity concentrations of Colorado River water by 90 milligrams per liter (mg/L) from what they would have been without the actions. That reduction of 90 mg/L has avoided additional damages of approximately $200 million per year.

Metropolitan is the regional water supplier for most of urban southern California, providing supplemental water to retail agencies that serve approximately 19 million people. Water imported via the Colorado River Aqueduct has the highest salinity level of all of Metropolitan's sources of supply, averaging around 630 mg/L since 1976. This salinity level causes economic damages to all sectors. For example, damages occur from:

- A reduction in the useful life of galvanized water pipe systems, water heaters, faucets, garbage disposals, clothes washers, and dishwashers, and an increased use of bottled water and water softeners in the household sector;

- An increase in the cost of cooling operations, additional need for and 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 due to groundwater quality deterioration;

- Increased cost of desalination and brine disposal for recycled water in the municipal sector; and

- A reduction in the yield of salt sensitive crops and increased water use for leaching in the agricultural sector.

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 the Colorado River Basin Salinity Control Act of 1974 (Act) into law. To further 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 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 67,000 tons of additional salinity control measures to be implemented by Reclamation and the Natural Resources Conservation Service (NRCS) by 2018, or approximately 11,400 tons of new control each year by Reclamation.

In implementing the Act, Congress recognized that most of the salt load in the Colorado River originates from federally owned lands. The majority of land within the Colorado River Basin is federally owned and administered. 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 Salinity Control Program reduces salinity by preventing salts from dissolving and mixing with the River's flow. Irrigation improvements (sprinklers, gated pipe, lined ditches) and vegetation management reduce the amount of salt transported to the Colorado River. Point sources such as saline springs are also controlled.

The Salinity Control Program, as set forth in the Act, benefits the Upper Colorado River Basin water users through more efficient water management and increased crop production, and benefits local economies through construction contracts and through environmental enhancements. The Salinity Control Program benefits 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 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. In recent years, funding for the Bureau of Reclamation's Title II – Basinwide Program has dropped to as low as $6.1 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.

Shortfalls in recent Basinwide Program funding levels have led to inefficiencies in the implementation of the overall Program. It is more efficient for Reclamation to cost share construction of the off-farm distribution system improvements prior to NRCS cost sharing implementation of on-farm salinity control practices (i.e., Reclamation should cost share the piping of a canal or lateral prior to NRCS cost sharing installation of a pressurized sprinkler system on farm). The funding amount identified above is required to get the Basinwide Program back on pace with the overall Program implementation needs. 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 Salinity Control Program has proven to be a very cost effective approach to help mitigate the impacts of increased salinity in the Colorado River. Adequate federal funding of this important Basin-wide program is essential. Metropolitan urges the Subcommittee to fund the Bureau of Reclamation's Salinity Control Program, Title II – Basinwide Program for fiscal year 2017 in the amount of $10.3 million.

House Appropriations Committee
Subcommittee on Energy and Water Development
Fiscal Year 2017 Appropriations

Combined Testimony on Behalf of:

Delaware River Basin Commission	Steve Tambini, Executive Director
Susquehanna River Basin Commission	Andrew Dehoff, Executive Director
Interstate Commission on the Potomac River Basin	Carlton Haywood, Executive Director

Testimony Related to: U.S. Army Corps of Engineers (Civil Works)

Chairman Simpson, Ranking Member Kaptur, and Members of the Subcommittee:

In spite of clear obligations set forth in the congressionally approved compacts of the Delaware River Basin Commission (P.L. 87-328), the Susquehanna River Basin Commission (P.L. 91-575), and the Interstate Commission on the Potomac River Basin (P.L. 91-407), and recently reinforced by express congressional direction to the Secretary of the Army in multiple statutes and accompanying reports, the United States is not meeting its obligation to support the annual general operating budgets for the three mid-Atlantic River Basin Commissions (RBCs). Since October 1, 1996, the United States has met its statutory obligation in only one of the last 20 fiscal years, which is in conflict with our respective compacts and contrary to the following recent congressional actions:

- The Secretary of the Army has not allocated funds as directed by Congress in WRDA 2007 (P.L. 110-114, Sec. 5019) and WRRDA 2014 (P.L. 113-121, Sec. 4001).

- The Secretary of the Army, to date, has not budgeted funds to the three RBCs despite clear intent to do so expressed by Congress in S. Rpt. 114-54 and the explanatory statement accompanying Division D of the Consolidated Appropriations Act, 2016 (P.L. 114-113).

- To the best of our knowledge, the Secretary of the Army has yet to provide the appropriate House and Senate committees with an explanation for the most recent omissions and analysis of their impacts in nine areas of RBC jurisdiction as required by WRRDA 2014.

Background:

The mid-Atlantic RBCs serve national interests by securing environmental protection, improving quality of life, and providing economic benefits for more than 25 million Americans in seven states and the District of Columbia.

Through our on-going collaboration with the U.S. Army Corps of Engineers, other federal agencies and our non-federal members on efforts such as water supply, flood risk management, watershed planning and environmental restoration, we serve both regional and national interests by optimizing the use and preserving the value of vital water resources in our

respective basins. Unlike the federal government, the RBCs' eight non-federal members have honored their funding obligations in various amounts as required by the three compacts.

The ability of the three RBCs to fully support the water resource-based economies, to develop, restore, and protect the waters and related natural resources of the Chesapeake Bay and Delaware River watersheds, and to improve quality of life by increasing resiliency to flood and drought extreme events is seriously compromised by the ongoing lack of federal funding.

Request for Appropriations:

Consistent with, and as required by, the congressionally approved compacts of the three mid-Atlantic RBCs and WRRDA 2014, the following programmatic appropriations are requested to restore federal funding to these RBCs in fiscal year 2017:

- Delaware River Basin Commission (DRBC) $715,000
- Susquehanna River Basin Commission (SRBC) $782,500
- Interstate Commission on the Potomac River Basin (ICPRB) $650,000

This is NOT an Earmark Request:

The DRBC, SRBC, and the ICRPB are regional federal-interstate agencies with the federal government as an active, voting member of each. The three RBCs collectively serve about 8.6 percent of the nation's population in seven states and the District of Columbia, comprising all or portions of 47 congressional districts, nearly 150 counties, and roughly 2,500 municipalities. The funding is not being requested on behalf of, or targeted to, the particular benefit of any specific state, locality or congressional district; as such, this request should not be considered as an "earmark" as defined under clause 9(e) of Rule XXI of the Rules of the House.

Summary:

The federal government has a clear obligation to fund the three mid-Atlantic River Basin Commissions. Congress has made it clear through WRRDA 2014 that the U.S. Army Corps of Engineers should allocate funding to the RBCs. Despite clear direction, there has been no funding provided to date. Support of the funding through a Congressional appropriation in FY2017 would provide much needed action towards restoring federal funding to manage some of the most significant water resources in our country. We thank the Members of the Subcommittee for their consideration of this critical request.

Contact Information:

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Andrew Dehoff: ADehoff@srbc.net; (717) 238-0423 x1221; www.srbc.net
Carlton Haywood: chaywood@icprb.org; (301) 984-1908 x105; www.potomacriver.org

ADDITIONAL SUPPORTING INFORMATION REGARDING WRRDA 2014

WRRDA 2014 (P.L. 113-121) Section 4001(b)(1), River Basin Commissions:

"The Secretary [of the Army] shall allocate funds to the Susquehanna River Basin Commission, the Delaware River Basin Commission, and the Interstate Commission on the Potomac River Basin to fulfill the equitable funding requirements of the respective interstate compacts."

S. Rept. 114-54 (Energy & Water Development Appropriations Bill, 2016; H.R. 2028):

"The Committee urges the Secretary to follow through on the direction provided by Congress in WRRDA section 4001 to find and implement the means necessary to financially support the Susquehanna, Delaware, and Potomac River Basin Commissions. Congress has made clear its intent that the 3 River Basin Commissions be supported and expects the Corps of Engineers to act appropriately." May 21, 2015, Page 46

Joint Explanatory Statement, Division D, Consolidated Appropriations Act, 2016 (P.L. 114-113)

"WRRDA Section 4001 – The Congress has made clear its intent that the Susquehanna, Delaware, and Potomac River Basin Commissions be supported, and the Corps is encouraged to budget accordingly." Congressional Record, Dec. 17, 2015, Page H10093

WRRDA 2014 (P.L. 113-121) Section 4001(b)(3), River Basin Commissions:

"If the Secretary does not allocate funds for a given fiscal year...the Secretary, in conjunction with the subsequent submission by the President of the budget to Congress...shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a notice that describes (A) the reasons why the Secretary did not allocate funds ... for that fiscal year; and (B) the impact of that decision not to allocate funds on each area of jurisdiction of each Commission..."

Assistant Secretary of the Army (Civil Works) Letter to the three RBCs:

"Funding for the DRBC, SRBC, and ICPRB will be considered along with many other worthwhile programs, projects and activities... No commitments can be made at this time concerning future funding amounts." ASA (CW) Jo-Ellen Darcy, Nov. 9, 2015

STATUTORY LANGUAGE CONTAINED IN THREE CONGRESSIONALLY APPROVED COMPACTS

Delaware River Basin Compact (Public Law 87-328):

ARTICLE 13 PLAN, PROGRAM AND BUDGETS
Section 13.3 Annual Current Expense and Capital Budgets.

(c) The respective signatory parties covenant and agree to include the amounts so apportioned for the support of the current expense budget in their respective budgets next to be adopted, subject to such review and approval as may be required by their respective budgetary processes. Such amounts shall be due and payable to the commission in quarterly installments during its fiscal year, provided that the commission may draw upon its working capital to finance its current expense budget pending remittances by the signatory parties.

Susquehanna River Basin Compact (Public Law 91-575):

ARTICLE 14 PLAN, PROGRAM AND BUDGETS
Section 14.3—Annual Current Expense and Capital Budgets.

(c) The respective signatory parties covenant and agree to include the amounts so apportioned for the support of the current expense budget in their respective budgets next to be adopted, subject to such review and approval as may be required by their respective budgetary processes. Such amounts shall be due and payable to the commission in quarterly installments during its fiscal year, provided that the commission may draw upon its working capital to finance its current expense budget pending remittance by the signatory parties.

Interstate Commission on the Potomac River Basin Compact (Public Law 91-407):

ARTICLE IV

The moneys necessary to finance the Commission in the administration of its business in the Conservancy District shall be provided through appropriations from the signatory bodies and the United States, in the manner prescribed by the laws of the several signatory bodies and of the United States, and in amounts as follows:

The pro rata contributions shall be based on such factors as population; the amount of industrial and domestic pollution; and a flat service charge; as shall be determined from time to time by the Commission, subject, however, to the approval, ratification and appropriation of such contribution by the several signatory bodies.

March 11, 2016

Testimony by Dr. Sam Hunter, Chairman, Mississippi Valley Flood Control Association

Testimony for the House Subcommittee on Energy and Water Development;

Related to the Department of the US Army, US Army Corps of Engineers and the

Mississippi River Commission

Testimony Submission Fiscal Year 2017 Appropriations

I am Sam Hunter, Chairman of the Mississippi Valley Flood Control Association. We respectfully submit this information for the Senate and House Appropriations Committees to provide information and requests generally related to the people and cost share partners of the Mississippi River Valley, the U.S. Army Corps of Engineers and the Mississippi River Commission. We represent the voices of land owners, farmers, state entities, cities and counties that are clearly articulated in resolutions that have been signed from eight states. The following link is for 24 resolutions that describe protection for more than 10 million acres. They are listed at the end of this document:
https://www.dropbox.com/sh/fjwf51ylgljze0c/AADF4j_6bx27xE3vwGtKWHyxa?dl=0

The people represent hundreds of partners and thousands of people that live along the magical Mississippi River and enjoy protection and the productivity of the world envied Commerce and Flood Control System. The Mississippi Valley Flood Control Association (MVFCA) requests FY17 Mississippi River and Tributaries (MR&T) Appropriations in the amount of $500 million per year and an infrastructure re-investment amount of $2 billion following the 2015 Record setting Christmas Flood. We remind you and our nation of the MR&T's exceptional system performance in 2008, 2011, 2012 (drought), and the 2015 Floods AND the other high and low water events for 88 years. The investment by the MR&T system in preparation for the 2011 flood ... resulted in more than $246 billion worth of damages prevented by the MR&T system ... a return on federal investment of over 46 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 low water experienced throughout the Mississippi River in 2012-2013.

Considerations:

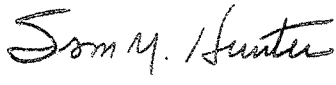
- the unrelenting Christmas storm systems that caused the greatest flooding on record in the Middle Mississippi River Basin and near record flooding in the Lower Mississippi River Basin; and
- the value of the agricultural products and the large agribusiness industry in the Mississippi River Basin produces ninety-two (92) percent of the nation's agricultural exports, seventy-eight (78) percent of the world's exports in feed grains and soybeans, and most of the livestock and hogs produced nationally; and
- sixty (60) percent of all grain exported from the United States is shipped via the Mississippi River from ports throughout the region, down to the Port of New Orleans and the Port of South Louisiana; and
- navigation on the Mississippi River carries the vast amount of vital products: coal, fertilizer, cement, gravel and salt, among others, which are the building blocks of our nation's economy; and
- the Mississippi River and Tributaries Project, the nation's most successful comprehensive flood control and navigation project provides protection for more than four million people that live in the Lower Mississippi Valley, impacts people in half the USA and since its creation in 1928, has saved thousands of lives, communities, and more than half a trillion dollars in property damage and loss; and
- the Mississippi River and Tributaries Project is one of the most successful civil works projects and the wisest public works investment our country has made, protecting more than $250 billion dollars in assets; and
- beyond its flood control protection, the Mississippi River and Tributaries Project provides benefits crucial to the Mississippi Valley region, including stable drinking water supplies, power generation, navigation and commerce, economic development and recreation; and
- as a result of the historic floods of 2008, 2011, and 2015-2016, the Mississippi River and Tributaries Project has been compromised; and
- failing to complete and recover the comprehensive flood control project, experiencing a failure in the system or failing to restore the system in time for the next high-water event would be devastating to our nation's economy and quality of life; and
- the United States Congress has the authority to prioritize and supply funding to the U. S. Army Corps of Engineers and other federal and state agencies so that those devastated by flooding can reliably produce, rebuild and restore their lives and livelihood; to approve and fund a comprehensive flood control and navigation project for the upper Mississippi River Basin to protect people and property; to pass legislation providing the authority to streamline the burdensome regulatory process to ensure federal funds are used for the primary objective of high value projects, not permits and studies.

Statement for the Appropriations Committee:

The Mississippi Valley Flood Control Association supports the passage of supplemental appropriations in the amount of **2 billion dollars** to repair flood damage to the system and infrastructure; yearly funding in the amount of **500 million dollars per year for continued maintenance of the Mississippi River and Tributaries Project**; the passage of **comprehensive flood control for the upper Mississippi River Basin** to provide economic reliability and to protect people and property throughout the entire Mississippi River Valley; and

The Mississippi Valley Flood Control Association supports **passage of federal legislation providing local levee and drainage districts in conjunction with the U.S. Army Corps of Engineers and the Mississippi River Commission the authority to streamline the burdensome regulatory and environmental processes** to ensure federal dollars are spent on projects to protect people and property.

Signed this 12th day of March, 2016 representing the Mississippi Valley Flood Control Association Executive Committee.



Sam M. Hunter

Chairman, Mississippi Valley Flood Control Association

List of Signed Resolutions:

1. The Little River Drainage District, MO
2. Mississippi Valley Flood Control Association
3. Missouri Levee & Drainage District Association
4. Upper Mississippi, Illinois, & Missouri Rivers Association (IA, IL, MO)
5. St. Francis Levee District of Missouri
6. Sny Island Levee Drainage District, IL
7. Big Island River Conservancy District, IL
8. St. Francis Levee District of Arkansas

9. Mississippi Levee Board
10. Yazoo-Mississippi Delta Levee Board, MS
11. Tensas Levee District, Louisiana
12. South Quincy Drainage and Levee District, IL
13. New Madrid County Port Authority, MO
14. Pemiscot County Port Authority, MO
15. Levee District #2 of Scott County Missouri
16. Elk Chute Drainage District of Missouri
17. Southeast Arkansas Levee District
18. Southeast Missouri Regional Port Authority
19. Fifth Louisiana Levee District, LA
20. International Port of Memphis, TN
21. Consolidated Drainage District Number One, MO
22. Fulton County Levee Board of Kentucky
23. Hickman-Fulton County Riverport Authority, KY
24. City of Memphis Proclamation, TN

MISSISSIPPI VALLEY FLOOD CONTROL ASSOCIATION
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OUTSIDE WITNESS TESTIMONY

House Energy and Water Development Subcommittee on Appropriations
Honorable Mike Simpson, Chairman

Mni Wiconi Project (PL 100-516, as amended), testimony submitted by
Oglala Sioux Rural Water Supply System (OSRWSS), Frank Means, Core System Director
Oglala Sioux RWSS (OSRWSS), Chuck Jacobs, Distribution System Director
Rosebud Sioux Rural Water System (RSRWS), Syed Huq, Director
Lower Brule Sioux Rural Water System (LBSRWS), Jim McCauley, Manager

Agency: Bureau of Reclamation

1. FY 2017 OMR Request

The Mni Wiconi Project respectfully requests $14.10 million in appropriations for operation, maintenance and replacement (OMR) activities in FY 2017, including $1.85 million for the Bureau of Reclamation (Reclamation). Report language is also requested (below).

OMR funds will be used as summarized in Table 1 by the Oglala Sioux Rural Water Supply System (OSRWSS), Rosebud Sioux Rural Water System (RSRWS) and Lower Brule Sioux Rural Water System (LBSRWS).

The OSRWSS Core System is the heart of the Mni Wiconi Project and 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...

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

The project has been treating and delivering more water each year from the OSRWSS Water Treatment Plant near Fort Pierre. The population will continue to grow within the service area and will reach the design population late in the next decade. The OMR budget must be adequate to keep pace with the system and its growing population and to protect and preserve the $470 million investment held by the United States in trust for the Tribes. Construction is completed, and funds are needed to properly operate and maintain the infrastructure.

The concern with the President's Budget for FY 2017 is the lack of attention to the need for an increasing level of funding. The FY 2013 through FY 2017 budgets were nearly identical at $12 million annually ($12.2 million in FY 2013 and FY 2017).

Inadequate annual budgeting by the Administration does not reflect:

- past additions to construction,
- ongoing increases in water deliveries consistent with the Water Conservation Plan,

TABLE 1

FY 2017 APPROPRIATIONS REQUEST

Cost Item	OSRWSS Core	OSRWSS Distribution	RSRWS	LBSRWS	Reclamation	Total
Number of Employees	19	33	20	12	8.2	92.2
Labor and Fringe Benefits	$1,069,340	$1,765,690	$1,103,000	$799,800	756,000	$5,493,830
Labor Overhead Costs	406,777	715,104	275,000	185,200	355,800	1,937,881
Non-Labor Costs		0				
Electricity/Natural Gas/Propane	385,000	550,000	240,000	118,200	462,000	1,755,200
Telephone/Communications	30,000	70,000	30,000	37,200	0	167,200
Water Treatment Chemicals/Supplies	415,000	262,650	60,000	95,500	41,000	874,150
Wells, Pumps, Motors & Replacement	280,000	93,215	60,000	92,900	0	526,115
Water Testing	90,000	41,200	2,000		0	133,200
Vehicle OMR	92,000	386,250	98,000	105,200	18,000	699,450
Water Service Providers	–	–	265,000		0	265,000
Travel & Training:	60,000	110,000	20,000	30,000	84,400	304,400
Other	186,100	216,800	112,250	170,000	135,000	820,150
Extraordinary Replacements						
Reservoir/tank mixers (4)	49,400				–	49,400
Ammonia/Monochloramines Analyzers (4)	92,832				–	92,832
Bad River Bridge Repair	50,000				–	50,000
Trucks and equipment				200,000		200,000
GPS/GIS		318,000				
Priority Community System Upgrades	–		–		–	0
Valve and Tee Replacements, Pine Ridge	–	299,400	–	–	–	299,400
Valve and Hydrant Replacement, Parmalee	–	–	429,000	–	–	429,000
Existing Community Transfers						
Manderson		25,000				
Oglala North		40,000				
Sharps Corner		25,000				
Parmalee			25,000			
Lower Brule				25,000		
Total	$3,206,449	$4,918,309	$2,719,250	$1,859,000	$1,852,200	$14,097,208

- aging facilities in need of maintenance (since start of construction in 1994),
- existing community transfers to the respective Indian rural water systems.

It is critical that project features not fall into disrepair, including 40 existing community systems that are scheduled for inclusion.

The Promise Zone designation for the Pine Ridge Indian Reservation was announced in December 2015. The Promise Zone Plan builds on the regional planning effort undertaken as a part of a HUD Sustainable Communities Grant. The plan focuses on developing solutions to infrastructure challenges and the necessary resources to upgrade existing community systems, among other things, to revitalize the region. The request in Table 1 is consistent with the designation and the plan and underscores the need for operation and maintenance funding for existing community systems transferred to the project. The need is comparable on the Rosebud and Lower Brule Reservations.

Continued upgrade to community water systems is a priority and a prerequisite to transfer of those facilities to the three Indian rural water systems in the Mni Wiconi Project. The following report language is requested (see Senate Report 114-54 of the last Congress for similarity):

Mni Wiconi Project, South Dakota.—Within the funds provided for the operations and maintenance of the project, Reclamation may use funds for upgrading existing community systems that have always been intended to be part of the project. Additionally, within 60 days of enactment of this act, Reclamation shall provide a report on a plan to identify existing resources, complete the needed community system upgrades and transfers, and budget for their operation, maintenance and replacement. This plan shall be coordinated with the United States Departments of Agriculture, Health and Human Services, Housing and Urban Development, Bureau of Indian Affairs, and Environmental Protection Agency.

The narrative of Reclamation in earlier budget requests properly included the transfer of existing community systems and responsibility for operation and maintenance:

> *...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.* (FY 2012-17 Budget Justifications, p. GPR-49)

Reclamation has systematically resisted inclusion of the 40 existing community systems and is requiring extraordinary upgrades before "transferring" the 40 existing community systems into the Mni Wiconi Project. According to Reclamation, "transfer" is a condition of eligibility for OMR budgeting by Reclamation. Reclamation does not fulfill the trust responsibility to the Tribes and their membership or the needs of the other residents of the respective Indian Reservations without a pathway for transferring the 40 existing community systems to the Project to make those systems eligible for OMR funding. Therefore, our request for FY 2017 includes $299,000 to replace valves in Pine Ridge Village and $429,000 for similar replacements in the village of Parmalee. These replacements have been identified by Reclamation as necessary maintenance activities before transfer of the community systems to the Project.

The request also includes modest OMR funding for the communities of Manderson, Oglala North, Sharps Corner, Parmalee and Lower Brule, communities that are currently fully funded for community system upgrades and will be transferred to the project in the fourth quarter of FY 2017 or later. More communities will be transferred and in need of OMR funding in FY 2018.

The Subcommittee is asked to consider the circular logic that Reclamation has created by its policy: that construction funding ($20 million) outside the authority of the Mni Wiconi Project Act is required to repair and replace existing facilities in 40 communities on the Reservations before "transfer" to the Project. The communities are not eligible for OMR funding until they are "transferred", even though the 40 existing systems are functioning successfully at present. The communities cannot receive OMR funding until they are "transferred", and there construction funds are not available to upgrade systems before transfer. OMR funding, therefore, is needed to conduct part of the extraordinary repairs that Reclamation requires before "transfer." By its actions and policies, Reclamation has prevented transfers and has denied OMR funds for the 40 existing systems in the Project. This is contrary to the Act's objective to include the community systems in the Project; without such inclusion, the Project is not complete nor functioning as Congress intended.

2. OSRWSS Regional Core Facilities

The staff of the OSRWSS core system includes 19 employees. The staff operates and maintains the 14 million gallon per day 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 deliver safe and adequate drinking water to the service areas of OSRWSS, RSRWS, LRSRWS and WRLJ.

3. OSRWSS Distribution on Pine Ridge Indian Reservation

The OSRWSS Distribution's 33 employees are responsible for maintaining 760 miles of PVC water mains and service lines, 30 high production water wells, 33 booster pumps and treatment stations, 38 water storage reservoirs, and 2,075 metered residences. The water system has been designed and constructed over a 22 year period, and services a total population of 21,510 residents on the Pine Ridge reservation.

The construction of the water system is now complete and valued in excess of $100 million, although 20 additional community system upgrades are still pending. The SCADA system is fully operational, and the blending of surface and ground water across the reservation is now a reality, and both are priorities. The mapping of our water system is paramount as well, an interactive GIS map of our entire system needs to be developed in concert with an Asset Management program. In preparation of addressing this need, a cost figure of $318,000 to create a GIS model that meets the OSRWSS Distribution system's specifications has been solicited.

4. Rosebud Sioux Rural Water System (RSRWS)

The staff of the RSRWS or Sicangu Mni Wiconi will total 20 full-time employees in FY 2017. The staff operates and maintains over 425 miles of mainline, 15 major pumping stations, 20 water storage reservoirs, 11 supply wells and associated chlorination facilities, and SCADA system.

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 $265,000 which reflects a reduction due to less pumping for the Mission system. 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 Reclamation was consummated and the former municipal system is now held in trust for the Tribe as part of the RSRWS. The inclusion and OMR of the Mission system are authorized by Section 3A (a)(8) of the Mni Wiconi Project Act, as amended.

5. Lower Brule Rural Water System

The completed Lower Brule Rural Water System (LBRWS) consists of a water treatment plant, six booster stations, three tanks/reservoirs, approximately 75 miles of core pipeline and approximately 300 miles of distribution pipeline. LBRWS has a staff of 12 full-time employees to provide the operation and maintenance of these facilities. As shown in Table 1, wages and fringe benefits totaled $756,000.

The budget includes $200,000 for the replacement of trucks and equipment that are nearing the end of their useful life. 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 is for oversight of operation and maintenance activities for all tribal systems, including the employment of an equivalent 8.2 persons. Reclamation also pays the Western Area Power Administration for project preference power used by the OSRWSS core system. Reclamation costs have increased progressively since 2013 and are expended before funds reach the project. This has the effect since 2013 of progressively reducing the remaining budget available to perform direct project functions on the OSRWSS core and on the respective Indian Reservations. The contradiction of an increasing oversight budget and decreasing direct OMR budget further demonstrates the need for an increasing total appropriation.

TESTIMONY OF DAVID TERRY, EXECUTIVE DIRECTOR, THE NATIONAL ASSOCIATION OF STATE ENERGY OFFICIALS, BEFORE THE U.S. HOUSE ENERGYAND WATER DEVELOPMENT APPROPRIATIONS SUBCOMMITTEE IN SUPPORT OF FY'17 DEPARTMENT OF ENERGY FUNDING

March 14, 2016

Chair Simpson, Ranking Member Kaptur 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 (DOE) programs. Specifically, we are testifying in support of not less than $70 million for the U.S. State Energy Program (SEP). SEP is the most successful program supported by Congress and DOE. This request in support of SEP should be for the *base program formula funding* that allows states to set and target their energy opportunities, within program guidelines, rather than utilizing DOE-directed competitive awards focused primarily on DOE's internal priorities. States utilize SEP funds to work with local businesses to help facilitate direct energy project development and demonstrations that leverage local resources, spur private investment, and create jobs. For over 35 years, SEP has set the standard for state-federal-private cooperation and matching funds to achieve critical federal and state energy goals. We also support $230 million for the Weatherization Assistance Program (WAP). Approximately half of the 56 State and Territory Energy Offices operate WAP and leverage private, utility, and other federal funds to deliver energy efficiency and associated cost savings to low-income citizens. Both SEP and WAP have a strong record of delivering savings to homeowners, businesses, and industry. In addition to SEP and WAP, we support FY'17 funding for the following DOE offices and programs: $289 million for DOE-EERE's Buildings Technologies Office and $469 million for DOE-EERE's Vehicle Technologies Office with strong support for the Outreach, Deployment and Analysis activities and the Clean Cities program. We strongly support $131 million for the U.S. Energy Information Administration, and $262 million for DOE Office of Electricity Delivery and Energy Reliability (DOE-OE). Within the DOE-OE account, NASEO stresses the importance of $6.5 million for the National Electricity Delivery program; $15 million for the State Energy Assurance pilot program; $17.5 million for Infrastructure Security and Energy Restoration program; $15 million for the State Distribution-Level Reform program; and strong support for the grid modernization and cybersecurity functions of DOE-OE.

With regard to NASEO support for funding of DOE-OE, we want to stress the importance of this office's Energy Assurance and Infrastructure Security and Energy Restoration actions. This work is essential to enabling state and private efforts to mitigate and avoid the threat to life, safety, and damaging economic impacts resulting from energy supply disruptions caused by natural disasters and man-made events. For example, resolution of the propane disruptions in the Midwest and New England during the winter of 2013-14 would have taken substantially longer and had an even greater impact on consumers and businesses without OE's leadership and partnership with the states and industry. NASEO strongly supports the request to provide $15 million for a state-federal-private energy assurance pilot program aimed at modernizing energy emergency preparedness planning, mitigation and response. This pilot program will reinvigorate an integrated federal-state-private approach to energy assurance planning and speed the restoration of all energy supplies – electricity, natural gas, petroleum

products – following an emergency. This ensures a more rapid return to normal economic activity and diminishes the health and safety risks to citizens' following major storms or man-made disasters. NASEO also supports DOE-OE's risk analysis and cybersecurity work.

EIA's state-by-state data is essential to a number of state and private energy efforts and has continuously improved over the years. For example, EIA's expertise is a critical piece of energy emergency preparedness and response. States and companies utilize EIA data to prepare for and respond to energy supply disruptions, such as those associated with Super Storm Sandy. Also, EIA's operation of the State Heating Oil and Propane Program, which partners with states and the private sector on the collection of weekly heating oil and propane prices during the heating season, was essential in responding to the 2013-2014 propane crisis and avoiding even more serious health, safety, and economic impacts.

I would like to return to and expand upon NASEO's support for funding of not less than $70 million for SEP. This unique federal-state partnership program has a history of success, and is the only DOE program that provides funding directly to the states to target unique local needs and opportunities. Formula SEP funding provides states a flexible means to implement state-directed actions such as:

- Developing comprehensive state energy plans, on behalf of governors, which identify untapped local energy resources, leverage advances in energy technologies and services, expand private sector energy efficiency opportunities, promote energy-related economic development, and open new energy markets for businesses;
- Assisting small- and medium-sized manufacturers in increasing energy efficiency to improve competitiveness and support business incubators;
- Incentivizing private-sector businesses to work with consumers (e.g., home energy efficiency measures) and local governments (e.g., public facility retrofits) to implement energy efficiency measures that save money; and
- Establishing public-private energy financing programs (e.g., revolving loans, utility on-bill programs, energy savings performance contracting) that leverage private sector expertise and delivery capabilities. In every case, these financing programs are aimed at bridging market gaps and transitioning to private sector financing solutions that support new energy technology markets in such areas as grid modernization, high performance buildings, advanced materials for manufacturing, and new transportation technologies.

In 2005, Oak Ridge National Laboratory (ORNL) completed a second study of SEP 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. In 2015, another study of the program found similar energy and cost savings.

Examples of Successful U.S. State Energy Program Activities:

California: SEP contributes substantially to a number of energy efficiency initiatives in California. The State Property Revolving Loan Fund Program is supporting energy upgrades in more than 60 buildings located throughout the state. The Municipal and Commercial Building Targeted Measure Retrofit (MCR) program has provided energy audits and energy efficiency improvements at non-residential buildings in California. MCR installations at over 7,400 project sites in California are estimated to realize over 85.8 GWh in electricity savings, 8.6 MW in demand reductions, and 950,000 therms in natural gas savings.

Idaho: The Idaho State Energy Office leveraged SEP funding to support the K-12 Energy Efficiency Project. Energy audits have been completed on 894 school buildings statewide. HVAC system tune-ups were also completed on the 894 school buildings across Idaho. Approximately $5 million was spent performing the HVAC tune-ups with anticipated savings for Idaho districts of about 10 percent of their energy budgets. Savings from the tune-ups are estimated at between 84,102,248 and 269,507,285 kBtu per year. Tune-up dollar savings based on site energy are estimated between $1,254,169 and $3,924,603 annually.

Indiana: The Indiana State Energy Office utilized SEP funding to help companies identify and make energy efficiency upgrades. The Indiana Conserving Hoosier Industrial Power (CHIP) program provided $2.2 million in grants to commercial or industrial facilities. Eleven companies in Indiana were selected through a competitive process to receive grants ranging from $52,000 to $400,000. In order to be considered for a CHIP grant, the proposed project had to be located in Indiana, and demonstrate measurable improvements in energy efficiency, result in a reduction in energy demand, or implement an energy recycling process.

Kentucky: The Kentucky Department of Energy Development and Independence, working with the Kentucky School Boards Association (KSBA) School Energy Managers Project, leveraged SEP funding for a $4.4 million three-year project that supports 40 energy managers providing services to 81 of Kentucky's 173 K-12 public school districts. KSBA reports more than $50 million in avoided utility costs between 2010 and 2015 have been redirected into school budgets.

Nebraska: The Nebraska State Energy Office leveraged SEP funding to expand the Dollar and Energy Saving Loan Program. The 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. To date, the program has financed 28,362 projects with low-interest loans, mainly in the residential sector, totaling more than $317 million from the energy office and participation by 267 lenders at more than 906 locations throughout the state. Over 25 years, the program's extraordinarily low write-off level is just $150,158.

New Jersey: The New Jersey State Energy Office utilized SEP funding to provide grants to seven energy projects ranging in size from a $63,000 boiler retrofit project at Rutgers University, to an $8.5 million landfill solar project with the New Jersey Meadowlands Commission. The grant program was designed to provide funding to state departments, agencies, authorities, colleges and universities that use innovative renewable or energy efficiency technologies or

innovative applications for renewable energy applications and energy efficiency projects. The New Jersey Institute of Technology (NJIT) is one example of New Jersey's state universities taking advantage of SEP funds. Upon final completion, the implemented measures will reduce building facilities management cost by approximately 75 percent, will reduce electric energy use by approximately 50 percent and will reduce the total building fossil energy use by approximately 40 percent through efficiency improvements and renewable energy generation.

New York: The New York State Energy Office partnered with the Wayne Finger Lakes (WFL) Board of Cooperative Educational Services (BOCES) to install a 50kW Solar Electric System on the roof of an Early Childhood Education Building. With an annual production estimated at 55,640kWh, the system is expected to reduce electric consumption at the site by 43 percent. Funded by a $326,511 SEP grant, the WFL is moving forward with a project that otherwise would not have happened.(SEP) distributed in New York State by the NYSERDA, the WFL is moving forward with a project that otherwise would not have happened.

Ohio: The Ohio State Energy Office utilized SEP funding to support the Energy Efficiency Program for Manufacturers. The program is enabling hundreds of Ohio's manufacturers to realize cost savings and improve the efficiency of their operations; putting these companies in a better position with their global competitors. To date, the program has invested more than $24 million in Ohio's manufacturing sector to reduce energy usage for a combined annual savings of 1,112,109 million British Thermal Units (gas, oil, other) and 79,256 megawatt hours. These savings translate into a greenhouse gas emission reduction of 110,256 metric tons per year.

Tennessee: The Tennessee State Energy Office leveraged SEP funding to provide assistance to local governments, K-12 schools, and public housing authorities to drive demand for energy efficiency investments. The goal is to serve at least 10 local governments and 8 public housing authorities, driving demand for energy improvements of $20 million.

Texas: The Texas State Energy Office used $239,000 in SEP funding to create clean energy business incubators. The funds supported clean energy technology startup companies, which attracted $7 million (24:1) in investments, created 86 jobs, and resulted in $7.9 million (27:1) in economic impact. Since 2001, the successful Texas Industries of the Future Program has had great success in supporting manufacturers to decrease the energy and water intensity of their Texas operations. The City Efficiency Leadership Council and Property Assessed Clean Energy (PACE) Training provides targeted assistance and outreach to Texas cities, specifically related to building energy code adoption and compliance.

Washington: The Washington State Energy Office has leveraged SEP funding to develop the technical standards, economic analysis, and participation in the Washington State Energy Code's technical advisory group. The first two code cycles have resulted in an 18-25 percent reduction in energy use and are anticipated to save $380 million in annual energy savings by 2030.

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National Hydropower Association – Jeffrey Leahey, Deputy Executive Director
Phone 202.682-1700, ext.150; email: Jeff@hydro.org
Committee on Appropriations - Subcommittee on Energy and Water Development
Department of Energy (Water Power Program); Corps of Engineers; Bureau of Reclamation

The National Hydropower Association (NHA)[1] respectfully submits this statement in support of $125 million for the U.S. Department of Energy's (DOE) Water Power Program and its research and development (R&D) activities and initiatives for Fiscal Year 2017.

In addition, NHA also strongly advocates directing significant funding to the operations and maintenance (O&M) programs of the U.S. Army Corps of Engineers (USACE) and Bureau of Reclamation (BuRec) to increase both capacity and generation at these federal hydropower facilities, as well as to those regulatory programs that fund the engagement and review of applications for non-federal hydropower development at USACE's and BuRec's water infrastructure.

Requesting $125 million in FY 2017 funding for the DOE Water Power Program

NHA encourages funds to be directed across all water power technology sectors – hydropower, pumped storage, marine and hydrokinetic and conduit power. The DOE divides funding generally across two main technology areas: hydropower/pumped storage and marine and hydrokinetic. **For FY 2017, NHA supports funding $45 million for the hydropower program area and $80 million for the marine and hydrokinetic program area.**

The Water Power program, which represents the single largest source of renewable electricity in the United States today, still remains one of the smallest of the Office of Energy Efficiency and Renewable Energy (EERE), particularly when compared to the funding levels for other EERE programs, such as wind and solar.

Yet, there is a growing recognition in Congress and the Administration for the need to expand our underutilized hydropower and marine energy resources and capture the substantial grid services and clean air benefits they can provide. As such, the NHA request for increased support for the DOE Water Power Program is in line with the "all-of-the-above" energy strategy supported by both Congress and the Administration. These investments will also spur domestic industries that create well-paying jobs and economic opportunities for localities.

The graph that follows charts the funding levels for the EERE programs from FY 2008 through the Administration's FY 2017 funding request, including American Recovery and Reinvestment Act of 2009 (ARRA) funding.[2]

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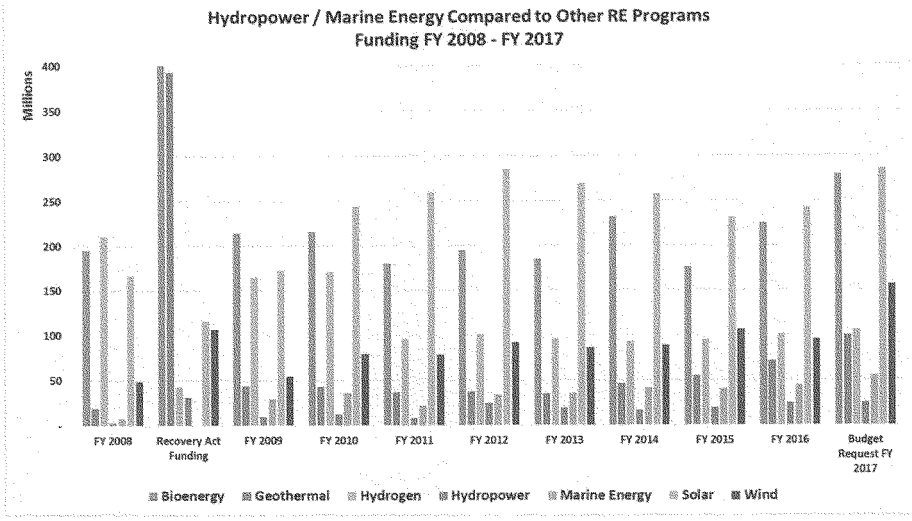
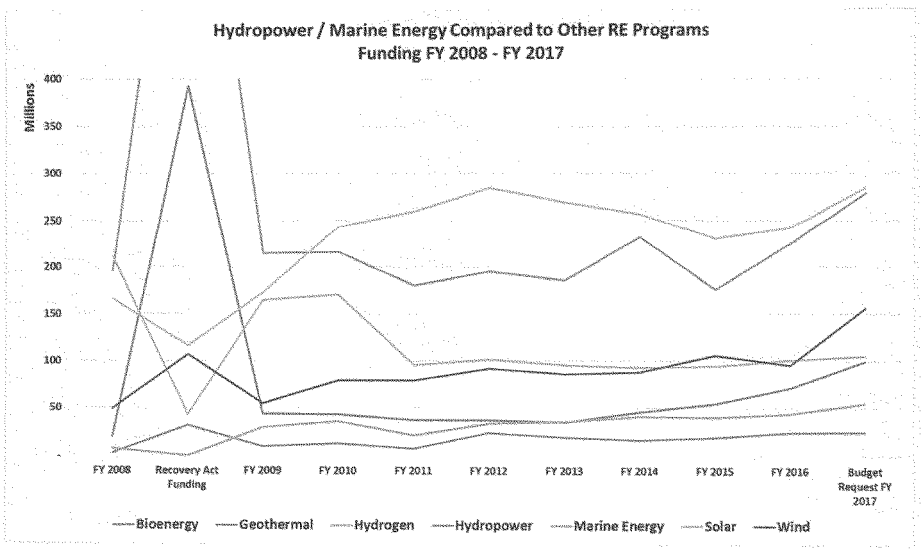
[1] NHA is the national association dedicated to advancing the interests of hydropower, pumped storage, conduit power and marine energy technologies. NHA's 220+ members include utilities, independent power producers, developers, equipment manufacturers and service providers. In 2014, NHA established the Marine Energy Council (MEC) in support of the ocean wave, tidal, current and ocean thermal technologies.

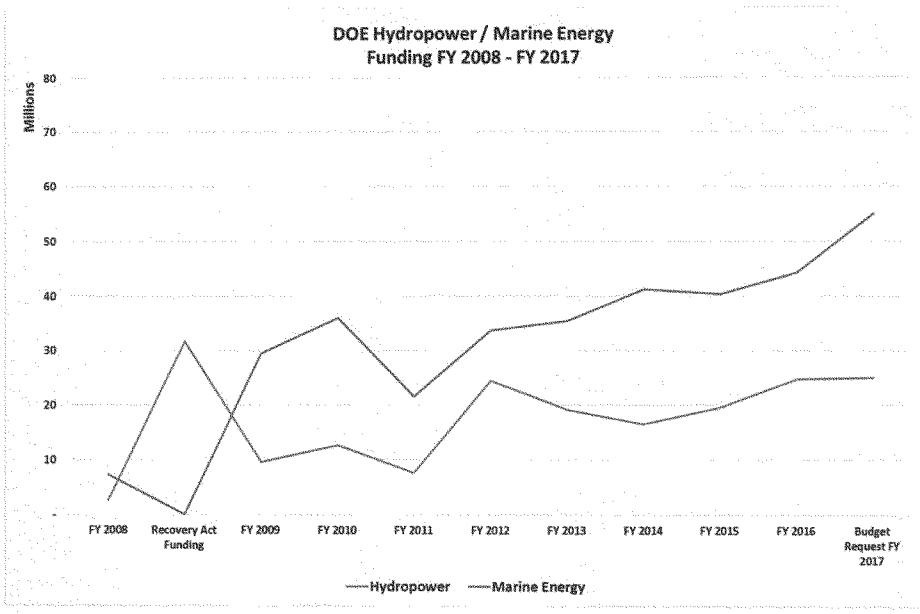
[2] Office of Management and Budget Annual Congressional Budget Requests



The next graph presents the same information, but more clearly shows the trend lines through time for each individual renewable energy technology program.



To provide an additional level of detail, the next graph charts the funding levels for the two sub-programs in the Water Power program – hydropower/pumped storage and marine and hydrokinetic – over the same period.



NHA appreciates and is encouraged by the growing investments by Congress in the DOE's Water Power program activities in recent years, along with the Administration's FY 2017 budget request, which recommended total funding at a historic level - $80 million. However, as these charts clearly indicate, the level of support is still substantially below that afforded other EERE programs, with the hydropower receiving the least funding, followed by the MHK program receiving the next lowest level of funding.

We believe one of the factors for the tremendous growth in U.S. wind and solar deployment over the last several years is the sustained investment shown by the federal government in technology R&D and market acceleration initiatives in these sectors. We believe deployment of water power resources would benefit from a similar level of federal investment.

As demonstrated in our previous appropriations statements, like wind and solar, there remains significant untapped potential across the water power technologies. For hydropower, these include: increasing efficiencies and expanding capacity at existing hydropower projects, adding generation to existing non-powered dams, new pumped storage facilities, and new stream-

reach development.[3] On the MHK side, this includes ocean wave, ocean tidal, ocean thermal and in-stream hydrokinetic resources.[4]

Specific DOE Water Power program initiatives and other important federal activities

- **EPAct 2005 Section 242 hydropower production incentive** – Report language from FY 2014-2016 has included funding for this incentive designed to help bring down costs that in turn can determine the viability of a given project. NHA supports continued funding for the program, which DOE is currently in the process of implementing.[5]

- **Offshore wave energy test facility construction** – NHA supports this initiative, which will evaluate utility scale wave energy converter (WEC) performance, environmental interactions and survivability, and help meet the goal of reducing the levelized cost of energy of wave energy technologies.

- **Hydropower Fellows program** – With DOE support, the Hydropower Research Foundation (HRF) awards fellowships to masters and doctoral degree students throughout the U.S. NHA supports the program, which stimulates new student research and academic interest and careers in hydropower and pumped storage.

- **Hydropower development at federal facilities** – NHA also urges the Congress 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 add non-federal hydropower development to their existing non-powered infrastructure.[6]

Conclusion

Unlocking the energy potential of our rivers, oceans, tides and conduits by accelerating the funding for the DOE Waterpower R&D program would allow the U.S. to realize the tremendous energy and environmental benefits of these resources.

The DOE Water Power Program is an important source of support for the project developers and owners, researchers, and scientists working to advance these clean energy options. Once again, we urge Congress to support a $125 million funding level for the program.

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[3] http://www1.eere.energy.gov/water/pdfs/npd_report.pdf and http://nhaap.ornl.gov/nsd

[4] http://energy.gov/eere/water/marine-and-hydrokinetic-resource-assessment-and-characterization

[5] NHA can report that the implementation of the Section 242 program is proceeding well. With award notices and decisions being processed and issued in a timely manner.

[6] DOE and other studies show that 12 GW of new capacity exist at U.S. non-powered dams, including Army Corps of Engineers' dams, as well as significant growth potential at existing Bureau dams, canals and conduits.

Richard Bajura, Director, National Research Center for Coal and Energy
James Wood, Director, US-China Clean Energy Research Center Advanced Coal Technology Consortium
West Virginia University

Written Statement Submitted to the Subcommittee on Energy and Water Development
United State House of Representatives Committee on Appropriations

Testimony on FY 2017 Budget Request for Office of Fossil Energy, United States Department of Energy

Chairman Simpson, Ranking Member Kaptur, and Members of the Subcommittee:

Thank you for the opportunity to offer recommendations regarding the extraction and use of our nation's abundant resources of coal, natural gas and oil that will continue to provide well over half of our energy needs into the foreseeable future. We request the Subcommittee to support the Fossil Energy Research and Development (R&D) budget at $734 million for FY 2017.

Remarks Regarding Strategies for Use of Fossil Fuels

At the end of last year, the U.S. fleet of 1,042 coal-fired electric generating units provided a power capacity of 285,000 megawatts for our electric grid (EIA *Electric Power Monthly*, February, 2016). The Energy Information Agency's *Annual Energy Outlook 2015* has forecasted that coal will be the dominant fuel for U.S. electricity generation through 2040. We find similar trends for the global use of coal looking well into the future.

Given coal's continued prominent role in electricity generation, we recommend that the U.S. takes an aggressive leadership role to ensure the wise, efficient, and environmentally responsible use of this resource both nationally and globally. While many nations have expressed concerns about CO2 emissions from coal and the use of other fossil fuels, we have many challenges to overcome to attain widespread deployment of capture and storage technologies. It is prudent that our national program also focuses on improving the efficiency of our generating units as a way of reducing the amount of emissions from coal-fired plants while we strive to develop breakthrough technologies for cost-effective management of carbon. Efficiency improvements are obtained by developing advanced power generation cycles and through improving the performance of our existing power plants.

The recently-realized abundance of natural gas and petroleum supplies, due in part to the investments our nation has made in the Fossil Energy program, provides many benefits but also many challenges. Natural gas power generation results in fewer CO2 emissions due to the high hydrogen content of the fuel. Enhanced oil recovery technologies provide a co-benefit of storing CO2 in the subsurface formations while enabling the extraction of more of the reserves than conventional petroleum production techniques. Substituting natural gas for coal as the fuel of choice for power generation will

result in coal-fired units, which are designed for steady-state operations, being relegated to intermittent dispatch which places severe stresses on the power plant due to cycling of temperatures and pressures in response to changes in load.

Transitioning from one form of power generation to a newer technology requires the development of workforce and manufacturing capacity in addition to a large infusion of capital to retire existing fleets in favor of newer plants. Proving out new technologies requires longer time frames for demonstrations sufficiently successful and cost-effective to attract the financial capital necessary to design, construct, and commission newer power systems. These realities require consistent policies and financial support for successful transitions and new technology development and deployment.

Our recommendations in the present testimony address the need for making continued investments in our present fleet of generators, developing advanced technologies for cost effective power generation and environmental performance, realistic road map plans for demonstrating new technologies, and a focus on continued development of even better technologies to meet the needs of a growing world.

Specific Funding Recommendations for Coal Programs

The coal R&D program has four major components: (1) Carbon Capture, (2) Carbon Storage, (3) Advanced Power Systems, and, (4) Crosscutting Research and Analysis which focuses on advancing new technologies for use in multiple applications. The Office of Fossil Energy has proposed reorganizing subelements of the overall program under these four components. The new organizational structure does not adequately address the needs for R&D in support of existing plants. Our recommendations for existing plants will be treated under the four components listed above.

In the area of Carbon Capture, we recommend funding at $155 million. Within this recommendation, $100 million should directed toward post combustion applications. Industry recommends that a substantive portion of these funds be used to support large pilot projects to demonstrate the effectiveness of new technologies and hasten their deployment into commercial use by 2025. We recommend that appropriate dialog occurs regarding projects to be selected for the large pilot program to vet the technology readiness level of such projects to ensure maximum benefit from the project to attain an end goal of commercial deployment. An additional $15 million should be directed toward pre-combustion applications. Research on advanced combustion is now housed in the Carbon Capture component and should be supported at $40 million.

Funding for the Carbon Storage component is recommended at $106 million. Continued support is needed to demonstrate successful storage of CO2 in subsurface formations under the Regional Carbon Sequestration Partnership program and to develop better ways of estimating and mitigating the risks associated with subsurface injection of CO2.

We recommend funding the Advanced Energy Systems program component at $72 million. Funding of $33 million is recommended for continued investments in gasification research for syngas

production and polygeneration plants that provide electricity and value-added chemicals. We recommend continuation of the coal + biomass to liquids program at $5 million which complements the technology developments under the gasification program. $24 million is recommended for continued development of the STEP program which will promote higher efficiency using carbon dioxide as the working fluid in the power generation cycle. New technologies need to be developed to achieve deployment of plants based on this new power cycle. Continued funding is recommended for the advanced turbines program at $10 million.

The Crosscutting Research & Analysis program provides support for the development of new technologies and for existing plants. Funding is recommended at $99 million. Achieving higher efficiencies in existing and new technology systems requires materials that operate at higher temperatures and pressures and other adverse environments. We recommend funding the materials subelement at $32 million, with at least $16 million being directed to continue the work of the Component Test Facility program and the development of advanced ultra-supercritical materials, and with at least an additional $6 million devoted to materials development for existing plants that will be under greater stress due to cycling power levels. The water management subelement should be supported at $21 million with at least $9 million devoted to the needs of existing plants for minimizing water use and remediating discharges. The sensors and controls subelement should be supported at $7 million, with at least $5 million devoted to improvements for existing plants. Significant gains have been achieved by retooling plants such as the Longview Power Plant in West Virginia where efficiency gains have been achieved in in excess of 2 absolute efficiency points and in the development of new systems such as the Turk plant in Mississippi. We recommend continuation of the computational modeling program at $10 million with a focus on modeling power generation units now that modeling of subsurface storage of CO2 has been moved to the Carbon Storage component.

The University Coal Research program focuses on developing new ideas while at the same time providing educational opportunities for ensuring a long-term supply of new workers. This program is underfunded and should be increased to an appropriation of $4 million per year and an additional appropriation of $1 million to support the HBCU universities. The Fossil Energy program also needs funding to support the development of newer breakthrough technologies in all areas of Fossil Energy R&D to develop the next suite of transformational technologies that will supersede the advanced systems now being developed since coal will be used well into the future. We recommend establishing a new element called Breakthrough Technologies funded at $16 million per year to undertake fundamental and applied research projects that will form the basis for new technologies to be deployed in 2030 and beyond. An additional $5 million is recommended for reestablishing the Existing Plants element under the Crosscutting program that will be directed toward efficiency improvements in equipment and other components of the power plant.

Recommendations for Other Program Elements

Given the role that enhanced oil recovery will play in developing subsurface CO2 storage because of its lower cost compared to storage in saline aquifers, and the need for continued development of our

natural gas supplies, we recommend funding for the natural gas and oil program at $100 million. These funds should be used to develop better technologies for recovering oil in the subsurface formations since even with tertiary oil recovery applications such as CO2 enhanced oil recovery we still leave 50% of more of the original oil in place in the reservoir.

Natural gas horizons such as the Rogersville formation in West Virginia are even deeper than the Marcellus and Utica formations that have spurred our boom in natural gas supplies. In order to develop these resources for future use, we need to develop advanced drilling technologies and advanced materials to withstand the increased temperature and pressures in which drilling rigs must operate.

Continued support should also be provided for offshore oil and gas production and continued development of the methane hydrates resources.

Funding is also recommended at $171 million to support the revised format proposed by Fossil Energy for line items such as program direction and in-house research at the National Energy Technology laboratory. An additional $17 million is recommended for plant and capital equipment and for the environmental restoration programs at $11 million.

Comment on Deobligation of Funds

In its budget recommendation for Fossil Energy R&D for 2017, the Administration has proposed that $240 million of the funding provided to the Fossil Energy R&D program would be obtained by reprogramming funds previously obligated to demonstration projects under the Clean Coal Power Initiative. We offer the following two recommendations. First, funding provided for the Fossil Energy R&D program should be from appropriated funds as part of the regular budget process and not by the use of alternative funding sources. Such funding routes lead to a lower base budget for the subsequent years which would then require additional efforts the next year to reach the same level of program resources as the previous year. Second, while it may be necessary at times to deobligate funds from projects that have no prospects for moving forward to completion, such actions should only be taken when no other options are available. Our comments in the first part of this testimony addressed our concerns about how completing final closures on large scale projects often takes longer than anticipated. We recommend that deobligation actions be taken with care lest industrial partners lose confidence in being able to complete their programs when facing unexpected headwinds in attaining the necessary funding and permitting for their project.

Thank you for the opportunity to share our views on funding for Fossil Energy programs.

The Nature Conservancy
Protecting nature. Preserving life.

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March 14, 2016

Testimony for the House Appropriations Subcommittee on Energy And Water Development on the FY 2017 Appropriations for the U.S. Army Corps of Engineers and the Bureau of Reclamation Submitted by The Nature Conservancy

Mr. Chairman and members of the Subcommittee,

Thank you for the opportunity to present The Nature Conservancy's testimony on the FY 2017 appropriations for the U.S. Army Corps of Engineers (Corps) and Bureau of Reclamation.

The Nature Conservancy recognizes the critical importance of our water resources and the benefits these resources provide to the economy, the quality of life in our communities, and the health of our people. We also understand the difficulty in managing these resources given the confluence of pressing issues: scarcity throughout the West, aging infrastructure, changing weather patterns, and challenges to quality. Yet, in these challenges we see opportunity.

We believe the nation must invest and prioritize wisely with an integrated watershed scale approach to solving the problems that are being exacerbated by changing weather patterns that are testing our assumptions about the design of water resources infrastructure; we are seeing more droughts, more floods, and larger coastal storms than in previous years. Additionally, the demands on water use are increasing from growing populations and agricultural production. For this reason, we support overall funding closer to FY16 levels than in the lower levels reflected in the Administration's funding request for FY17.

Fortunately, we now understand the very real value and cost-effectiveness of natural infrastructure (wetlands, floodplains, healthy forests, coastal barrier islands, oyster and coral reefs) in solving water resource management problems. Ecosystem restoration produce multiple benefits including improved navigation, flood control, higher quality water, sustaining commercial fisheries, and supporting recreation and tourism. These projects also leverage significant investments from state, local, nonprofit and private sector cost share partners which result in real economic development. With impacts stretching out for decades to come, the projects and proposals that follow reap high returns on investment. The Nature Conservancy is focused on supporting the programs and investments needed to ensure economic and environmental benefits are enhanced today and made sustainable for tomorrow.

The Conservancy would like to thank the Subcommittee for supporting large scale restoration programs over the last decade. These programs, and encourage operations of existing water infrastructure to improve environmental outcomes have been essential to restoring and maintaining some of America's most precious and imperiled ecosystems. We also appreciate past support for smaller-scale projects that provide cumulative benefits and serve as powerful demonstrations of effective restoration.

Sincerely,

Kameran Onley
Director, U.S. Government Relations

USACE General Investigation

Interbasin Control of Great Lakes and Mississippi River Aquatic Nuisance Species: The Nature Conservancy encourages Congress to address the urgent problem of invasive species. The funding will first fund the Brandon Rd. is which project is supported by the Chicago Area Waterways System (CAWS) Advisory Committee which represents thirty public and private stakeholders that benefit from and have responsibilities related to the CAWS, as well as regional stakeholder groups representing commercial, recreational, and environmental interests (including the Conservancy). Not only is Brandon Road an important control point to prevent the movement of AIS such as Asian carp toward the Great Lakes, it also represents an opportunity to evaluate the effectiveness of a range of control technologies, and is an important step toward preventing the two-way transfer of AIS between the Great Lakes and Mississippi River basins. The Conservancy requests no less than $2,600,000 for FY 2017.

Savannah River Below Augusta Ecosystem Restoration: The Corps and the Conservancy are working together to identify ecological flow requirements downstream of Corps dams on the Savannah River and incorporate those flows into dam operations to improve fish and wildlife habitat and community flood protection. This effort has identified the restoration of cutoff river channels as a priority to improve water quality in the river and downstream harbor and alleviate operational constraints during drought. The Conservancy supports the Presidents requested budget of $800,000 for this project for FY 2017.

Hudson River Habitat Restoration: This feasibility study will yield implementation plans for specific project locations that address historic habitat loss and future climate adaptation needs in the Hudson River Estuary. Resumed in FY 2016, the Project will develop site-specific restoration strategies that integrate and advance both the USACE Aquatic Ecosystem Restoration mission and the NYS DEC Hudson River Estuary Program Action Agenda. The Nature Conservancy requests $800,000 for FY 2017 to keep the restoration project on schedule for FY 2018 completion, as required by USACE policy.

USACE Construction

Navigation and Ecosystem Sustainability Program (NESP): The Nature Conservancy supports this program that recognizes the dual purpose navigation revitalization and river ecosystem protection as authorized in WRDA 2007. The Conservancy requests $10,000,000 for this program for FY 2017.

Upper Mississippi River Restoration: Authorized in 1986, this program supports coordinated habitat rehabilitation and enhancement projects and monitoring for the Upper Mississippi River system. Thirty years of successful partnership has provided the ability to complete more than 56 projects, benefiting over 107,000 acres of aquatic and floodplain habitat. Currently, 34 projects in the program are in planning, design, or under construction. Completion of these projects will benefit an additional 75,000 acres of aquatic and floodplain habitat. The program has the capacity to perform at the full funding level, which was granted for the first time for FY 2015. The Conservancy would like to see funding, currently at $20,000,000 for FY 2017, restored to the FY 2015 level of $33,170,000.

Chesapeake Bay Oyster Recovery: The successful completion of the Harris Creek Oyster

Restoration project in Maryland demonstrates the effectiveness of ecological restoration and shows that strong partnerships between private, state and federal agencies can accomplish tangible outcomes in the Chesapeake Bay for the benefit of water quality, environmental health and economic prosperity. Continued funding of the restoration of the Eastern Oyster is essential to sustain this progress. With several tributaries in Virginia and Maryland close to being declared functionally restored, failure to provide funding for these ongoing efforts threatens the momentum in native oyster restoration that has been built over several years. The Conservancy would like to see funding restored to the FY 2012-2015 levels of $5,000,000 for FY 2017.

Missouri River Fish and Wildlife Recovery Program (MRRP): MRRP activities assist with the recovery of species listed under the Endangered Species Act and the ecosystems on which they depend. Activities also address the effects of the Missouri River Bank Stabilization and Navigation Project (BSNP), the Kansas River Project, and the operation of the Missouri River Mainstem Reservoir System. The Conservancy would like to see funding maintained for FY 2017 at the FY 2016 level of $40,063,000 to provide sufficient funding for habitat creation, maintenance, and acquisition and to ensure compliance with the U.S. Fish and Wildlife Service's Biological Opinion.

Louisiana Coastal Area Ecosystem Restoration-The Nature Conservancy supports this construction as budgeted at $9,000,000 and the coordinating feasibility study as budgeted at $520,000.

Chicago Sanitary and Ship Canal Dispersal Barrier: Invasive plants, invertebrates and fish pose serious threats to the biodiversity and fisheries of the Great Lakes and Mississippi River basins, which are home to nearly 50% of our nation's freshwater fish species and support sport and commercial fisheries worth billions of dollars. This project seeks to prevent the immediate invasion of the Great Lakes by Asian carp by completing three electronic barriers in the Construction phase. The Nature Conservancy supports the President's request of $12,000,000 for FY 2017.

South Florida Ecosystem Restoration Program: The federal government has made substantial progress on Everglades' projects, and we encourage continued funding for authorized CERP projects. The Conservancy supports the $106,000,000 proposed for construction and the $299,000 for Operation & Maintenance in FY 2017.

Hamilton City Flood Damage Reduction and Ecosystem Restoration: The fact that the Corps selected Hamilton City for a new start construction project in FY 2014 is a testament to the innovative dual nature of the project: increasing flood protection for Hamilton City while restoring approximately 1,500 acres of riparian habitat. The Conservancy supports the $8,500,000 proposed in the FY 2017 budget and looks forward to construction starting this month.

USACE Operations & Maintenance

Sustainable Rivers Project (SRP) is an initiative to modernize the operations of the nation's reservoirs to enhance water supply, flood protection, hydropower generation, and recreation, while restoring critical ecosystems and the economically valuable services they provide.

Launched by the Corps, this is an initiative to work with the states, other federal agencies, and The Conservancy to update decades-old water management practices to better meet society's needs today and in the coming decades. The Conservancy supports full funding of reservoir operations and maintenance, with an additional $15,000,000 for the updates to operation manuals per Section 1046 of WRRDA 2014.

Other

Continuing Authorities Program (CAP): Section 1135, provides project modifications for improvement of the environment and Section 206 for aquatic ecosystem restoration. Adequate recent funding for the CAP programs has been critical for model floodplain restoration and reconnection projects. Demand for these valuable programs continues to outstrip funding, which is why the Conservancy calls for restoration of FY16 funding levels of $3,000,000,00 for Section 1135 funding and $8,000,000 funding for these programs that invite private/public partnerships.

Water Infrastructure Finance and Innovation Act (WIFIA): Section 5021 of WRRDA 2014 provides authority for low-cost credit that can leverage private investment for water infrastructure. The criteria includes whether a project protects against extreme weather events or helps maintain the environment. The Nature Conservancy supports funding of $25,000,000 as authorized in Section 5033 of WRRDA.

Bureau of Reclamation

The Nature Conservancy supports continued funding as requested in the President's Budget for the following programs:

Upper Colorado River Endangered Fish Recovery and San Juan River Basin Recovery Programs: These programs take a balanced approach to recovering four endangered fish species by implementing a range of basin-wide strategies, including improved management of federal dams and irrigation infrastructure, river and floodplain habitat improvement, stocking of endangered fish, and management of non- native fish species. The Conservancy supports the President's request of $4.915 million for these programs for FY 2017.

WaterSMART: The WaterSMART program supports sustainable water use and management through water conservation, reuse and recycling, and environmental protection and restoration. The Conservancy is pleased to see the overall increase in funding for this program for FY17, however we do request a slight increase to cover the extra funding needed for a key set of WaterSmart cost-shared grants. In the past, only 1 in 5 of these projects has been funded. With an increase in the funding for these grants from $29 to $30 million in FY 2017, 1 in 3 projects could be funded. Thus the Conservancy requests the overall WaterSMART program be funded at $68.1 million in FY17 as compared to the President's request of $61M, so that the additional funding needed for these key grants is not just subtracted from the overall WaterSMART program. Furthermore, Reclamation's ability to spur collaborative, locally-led water conservation projects is limited by a statutory cap on appropriations for grants to improve water management (42 U.S.C. 10364). We therefore request that the statutory cap be raised by at least $50 million so that grant programs, like the WaterSMART grants, can continue supporting local, cost-shared solutions to conserve water and increase water use efficiency beyond FY17. We also support the proposed funding for the Bureau's environmental restoration work, including the programs in the California Bay Delta and Colorado River.

House Appropriations Committee
Subcommittee on Energy and Water Development

Testimony of Chairman Anthony D. Johnson
Nez Perce Tribal Executive Committee
Nez Perce Tribe

23 February 2016

The testimony of the Nez Perce Tribe (Tribe) addresses the FY 2017 Budget Justifications of the U.S. Bureau of Reclamation (Reclamation).

The Reclamation budget request for the Lewiston Orchards Project (LOP), Pacific Northwest Region (located at PN-37 of the Congressional Justification document), provides a specific funding increase for the Lewiston Orchards Water Exchange project. The explanation for the funding increase states the following:

Funding for the Lewiston Orchards Water Exchange activity increased by $2,963,000. Funding will directly support the current Term Sheet Agreement that stays litigation between Reclamation and the Nez Perce Tribe, confirming Reclamation's commitment to permanent resolution of the Tribal trust, ESA, and water quantity issues surrounding the Lewiston Orchard Project. Funding will be used to continue design and implementation activities for proposed construction of a well and associated facilities. This will replace the surface water system resolving Endangered Species Act (ESA) and Federal and Tribal trust issues while still providing a reliable water supply for the Lewiston Orchards Irrigation District.

The justification requests funding in the amount of $3,509,000 for the Fish and Wildlife Management and Development program of the LOP. The following excerpt is the description that is provided for the program fund request:

Continues construction of an off-reservation groundwater-pumped system consisting of multiple wells; each well could be done in phases, and would be connected to the Lewiston Orchards Project system in lieu of surface water for instream flow to meet requirements of the ESA. Testing of the pilot well indicates that it will meet its production target and that the regional aquifer will support more wells. This supports the long term plan of drilling multiple wells through 2025 at an estimated cost of $31,000,000. Reclamation and the Nez Perce Tribe have a written agreement for compliance to include the water exchange and eventually title transfer. The funding increase is due to water exchange facility construction and NEPA documentation. Funding will continue NEPA-compliance activities for the title transfer and the full water exchange. Reclamation anticipates receiving $450,000 of in-kind services in support of the Lewiston Orchards water exchange project in FY 2017. Emphasis added.

The Nez Perce Tribe strongly supports Reclamation's FY 2017 request in this area of activity, and emphasizes with this testimony the need for this increase in funding for Reclamation in this fiscal year and subsequent fiscal years.

Reclamation's programmatic request references a water exchange and title transfer project of

extraordinary importance to the Nez Perce Tribe. The LOP is located predominantly on the Nez Perce Reservation and directly triggers the federal-tribal fiduciary relationship between Reclamation and the Tribe. Since 2009, the Nez Perce Tribe has worked collaboratively with Reclamation, and with a stakeholder group of regional governmental entities[1], as well as additional federal agencies including the Bureau of Indian Affairs and the U.S. Army Corps of Engineers, to address a set of problems surrounding the LOP.

The LOP issues the Tribe and its partners, centrally including Reclamation, are working to address include: Endangered Species Act impacts on listed Snake River Steelhead and designated critical habitat from the present LOP location; LOP impacts on the Nez Perce Tribe and its cultural and natural resources on and adjacent to its treaty-established Reservation; and water supply quantity and quality needs of the Lewiston Orchards Irrigation District (LOID).

As is stated in the Congressional Justification, the comprehensive solution presented by the water exchange and title transfer referenced by Reclamation is the development of a new water supply to the LOID area that will resolve all of the impacts and needs just mentioned. The Idaho Congressional Delegation has expressed its appreciation for Reclamation's commitment to such a comprehensive and permanent resolution, the U.S. Army Corps of Engineers' commitment and effort in advancing watershed restoration planning for this water exchange, and the willingness of both agencies to work in coordination on this important project. As this water exchange and title transfer intersects with Reclamation, Corps, and Bureau of Indian Affairs programs, authorities, responsibilities and budgets, the Tribe has a tremendous interest in the funding provided to these agencies' programs and budgets in future fiscal years.

The Nez Perce Tribe would like to thank you for the opportunity to submit this testimony today.

[1] This regional stakeholder partnership is referred to as the Lower Clearwater Exchange Project (LCEP) and is composed of the City of Lewiston, Idaho, Nez Perce County, Idaho, the Lewiston Orchards Irrigation District, the Lewis Clark Valley Chamber of Commerce of Clarkston, Washington and Lewiston, Idaho, and the Nez Perce Tribe.

Testimony for the Record
Marvin S. Fertel
President and Chief Executive Officer, Nuclear Energy Institute
House Appropriations Subcommittee on Energy and Water Development
March 15, 2016

The Nuclear Energy Institute (NEI) appreciates the opportunity to provide testimony on Department of Energy and Nuclear Regulatory Commission programs.

As the NRC concludes the disposition of Fukushima action items by the end of FY 2016, the agency should turn its attention to ensuring timely and efficient processing of licensing actions, ensuring readiness to review second license renewal applications in the coming years, ensuring effective implementation of Part 52 and the ITAAC process, and establishing the regulatory framework for advanced reactors. Given the recommendations of the Project Aim report and Congressionally-directed independent assessments, the NRC must continue significantly improving the efficiency and transparency of its regulatory processes consistent with its principles of good regulation. Regulatory activities and rulemakings must be prioritized based on these principles, which should result in deferral or cessation of numerous activities and rulemakings that have low or negligible safety impact. Importantly, the NRC's resources and staff levels should be reduced to reflect the reduced demand for agency activities in some areas and the reduction in the number of operating reactors and material licensees.

In the coming fiscal year, DOE should focus on (1) developing technologies and other solutions that can improve the reliability, sustain the safety and extend the operation of current reactors that are essential to meet the nation's energy needs and environmental goals; (2) further development and deployment of small modular reactors (SMRs) and advanced reactor designs for America's national interests while maintaining U.S. global leadership in nuclear technology; (3) developing a sustainable used nuclear fuel management program; (4) minimizing the risks of nuclear proliferation and (5) maintaining safe and effective oversight and stewardship of NNSA and EM management responsibilities.

Specifically, the nuclear energy industry makes the following recommendations:

- Reduce the NRC budget request to reflect efficiency improvements and reduced workload without compromising the shared NRC and industry commitment to safety. The reductions should include $36 million in savings identified by the NRC subsequent to the issuance of the FY 2017 budget request, a reduction in corporate support of approximately $6 million consistent with the FY 2016 appropriations direction and a reduction of prior year balances;
- Oppose reinstating a tax on nuclear power plant operators to pay the cost of decontaminating and decommissioning the federal government's uranium enrichment plants, a responsibility that the industry already has fullfilled;
- Provide funding for DOE and NRC to complete the licensing of the proposed Yucca Mountain repository;

- Provide robust funding for the DOE Office of Nuclear Energy, including the small modular reactor program and advanced reactor program and activities;
- Provide ongoing DOE funding for two advanced reactor industry cost-shared awards;
- Fund NRC's request for $5 million for non-fee billable advanced reactor activities;
- Fund completion of the Mixed Oxide (MOX) Fuel Facility at the Savannah River Site;
- Provide for cleanup of legacy waste from the Manhattan Project and Cold War nuclear weapons production with predictable, measureable and meaningful funding;
- Fund modernization of the nuclear security enterprise to meet requirements for the nation's nuclear deterrent and U.S. Navy nuclear propulsion;
- Preserve the DOE loan guarantee program for industry financed loans for clean energy technologies as identified by DOE for advanced nuclear power plants and front-end nuclear fuel cycle to ensure global leadership in nuclear innovation;
- Retain the Integrated University Program at DOE and NRC;
- Continue funding for the Energy Innovation Hub for Modeling and Simulation (Consortium for Advanced Simulation of Light Water Reactors).

Nuclear Regulatory Commission

The level of detail and transparency in the NRC budget justification has declined in recent years, making it difficult for stakeholders to provide detailed analysis and recommendations. For example, it appears the FY 2017 budget request would provide funding for the NRC to continue current rulemakings and other requirements. Despite Congressional direction in the FY 2016 Consolidated Appropriations Act to include all planned rulemakings in its annual budget submittal, it remains unclear how many existing rulemakings the agency has on its docket, which rulemakings are funded and which are unfunded. With respect to future rulemakings, the industry believes continued direction by the Appropriations Committee to establish a Commission-driven rulemaking process for future rulemaking proposals should provide the needed transparency and level of detail for the agency's stakeholders.

The industry applauds the NRC's Project Aim initiative to improve the agency's agility, effectiveness and efficiency, and to be more responsive to anticipated changes in its workload over the next five years. As the agency has determined, Project Aim can be implemented without compromising the shared NRC and industry commitment to safety. The industry encourages continued active oversight of the implementation of Project Aim actions.

Uranium Enrichment D&D Tax

While the industry fully supports the complete decommissioning and decontamination of gaseous diffusion plants, NEI strongly opposes the reinstatement of a uranium enrichment decontamination and decommissioning tax on the industry. Having twice met their commitment to finance cleanup costs, producers and consumers of electricity should not be forced to bear the additional financial burden of this unwarranted tax. The Obama administration continues to propose reinstatement of this tax as a means of raising revenue despite the fact that industry paid for cleanup costs as part of the price for government uranium enrichment services and again as required by 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 three uranium enrichment plants in question operated for 25 years as Department of Defense facilities and were irretrievably contaminated long before sales of enrichment services to the commercial nuclear industry.

Used Nuclear Fuel Management

If the Committee chooses to include authorization provisions related to used nuclear fuel management, NEI urges that such provisions be consistent with the industry's proposed integrated used nuclear fuel management principles: as adopted by NEI in November 2015, consisting of ten basic elements:

1. A new management and disposal organization outside the Department of Energy dedicated solely to executing a high-level radioactive waste program and empowered with the authority and resources to succeed.

2. Access to the Nuclear Waste Fund for its intended purpose, without reliance on the annual appropriations process but with appropriate Congressional oversight.

3. Develop a consolidated storage facility for used nuclear fuel and DOE's high-level radioactive waste in a willing host community and state. Used fuel from shutdown commercial reactor sites without an operating reactor should have priority when shipping commercial used fuel to the storage facility. Assigning priority to shutdown plants shall not affect the right to damages for DOE's failure to perform absent such priority.

4. In parallel with developing a consolidated storage facility, complete the Nuclear Regulatory Commission's review of the Yucca Mountain repository license application, followed by construction and operation of the repository and developing a second geologic repository, if necessary.

5. Research, development and demonstration on improved or advanced fuel cycle technologies to close the nuclear fuel cycle, thereby potentially reducing the volume, heat and toxicity of byproducts placed in the repository, recognizing that a geologic repository will be required for all fuel cycles. All funds for this RD&D must come from DOE's budget and not the Nuclear Waste Fund. In addition to RD&D, the NRC should develop a regulatory framework for the licensing of advanced fuel cycle technologies.

6. A legislative determination that, for the period after the licensed term for reactor operation until removal for disposal, no consideration of environmental impacts of used nuclear fuel storage shall be required by the NRC in connection with any reactor licensing.

7. The Nuclear Waste Fund (NWF) fee should not be raised above $0 unless (1) the annual expenses for the program's ongoing projects exceed the annual investment income on the NWF and (2) the projected life-cycle cost demonstrates that the fee must be reinstated to achieve full cost recovery over the life of the program.

8. Communities and states hosting the Yucca Mountain repository and/or consolidated storage facilities shall be eligible for benefits. The Nuclear Waste Fund can be used for these benefits if they are reasonable and do not result in an excessive increase in overall program costs.

9. Standard contract holders should not be required to waive their right to recover damages or settle claims resulting from DOE's breach of contract as a condition of the federal government accepting used nuclear fuel for consolidated storage or permanent disposal.

10. The industry will fulfill its one-time fee obligations consistent with the provisions in the Nuclear Waste Policy Act.

Small Modular Reactors
The industry supports the continuation of the SMR Licensing and Technical Support (LTS) Program beyond FY 2017. The industry also supports continuation of the private sector partnership beyond SMR LTS, similar to what was accomplished under the Nuclear Power 2010 program, to sustain further development toward deployment and near-term commercialization. Continued investment by the federal government as a cost-sharing partner is necessary and prudent to ensure the first-generation of economically competitive SMRs are operated in the United States. Doing so will help provide America new low-carbon energy technology that is scalable while assuring U.S. leadership in the global reactor market. .

To help accelerate SMR commercialization, a consortium of leading developers and potential customers of SMR technology have announced the establishment of an organization called SMR Start. The industry-driven entity will provide a unified voice to advance the policy and regulatory issues confronting this emerging technology and achieve the greatest possible efficiency in addressing institutional, market, communications and financing issues. Developing this technology will help U.S. companies claim a large portion of the international market for smaller, carbon-free energy sources. Domestically, the electricity generation sector is undergoing significant changes: expansion of intermittent resources such as wind and solar, which create operational challenges for grid operators; continued expansion of natural gas-powered electric generation; retirement of as much as 30 percent of our coal-fired generating capacity; competitive market structure challenges; and proposed new Environmental Protection Agency regulations to limit carbon emissions. SMRs will provide energy companies with an additional low-carbon electric generating option as they respond to these market forces and will complement the large light-water reactor designs. Given the benefits to domestic job creation, reliable and domestic clean electricity supply, and export value, the development of SMR technology today is an investment in our energy, environmental and economic future.

Advanced Reactor and Fuel Cycle Technologies
NEI supports programs managed by DOE's Office of Nuclear Energy that seek to accelerate the commercial use of new reactor technologies, sustain safe operation of existing reactors that provide two-thirds of American's carbon-free electricity and develop advanced fuel cycles to more effectively manage used nuclear fuel. By 2030, the United States could experience electricity shortages if a significant number of nuclear plants are retired in a short period. One way to avoid this outcome is renewing the operating licenses of nuclear power plants for a

second period of up to 20 years. Providing funding to conduct R&D on advanced technologies that improve the reliability, sustain safety and extend the life of the current reactors is critical to support second license renewal. The industry was pleased to see DOE issue two industry cost-shared awards to support the development of advanced reactor concepts. NEI encourages the continuation of funding for these two reactor designs and supports DOE efforts under the Gateway for Accelerated Innovation in Nuclear program.

The industry encourages funding NRC's request for $5 million for non-fee billable advanced reactor activities to accelerate development of regulatory infrastructure to prepare for effective and efficient reviews of advanced reactor technologies.

Mixed-Oxide (MOX) Fuel Fabrication Facility
NEI supports the timely completion and operation of the MOX Fuel Fabrication Facility at the Savannah River Site. Construction of the MOX facility is 70 percent complete, employs 1,800 people directly and uses more than 4,000 American contractors and suppliers in 43 states. Under the Plutonium Management Disposition Agreement, the United States committed to transform 34 metric tons of U.S. weapons-grade plutonium—enough plutonium for 17,000 nuclear weapons—into fuel for commercial power reactors. The administration's FY 2017 budget proposal to terminate construction of facility and instead provide $285 million to a "dilute and dispose" method is wrong. This change of course will break an international obligation and will leave weapons-grade plutonium stranded at DOE-SRS for the foreseeable future given that the alternative is unproven and unworkable. NEI urges Congress to continue funding MOX construction so that the nation can honor its international obligation while safely transforming 34 metric tons of weapons grade plutonium into mixed-oxide fuel for electricity production.

Environmental Management (EM)
NEI supports DOE's mission to complete the safe cleanup of legacy sites resulting from five decades of nuclear weapons development and government-sponsored nuclear technology research. NEI commends EM's footprint reduction to date. The remaining sites represent significant challenges that DOE must address to meet its commitments to affected communities and states. Adequate, reliable funding is essential to meeting these challenges. DOE spends approximately 90 percent of its budget on contracts and large capital projects. In particular, the EM program relies on an array of contractors to carry out its diverse cleanup mission. It is critical that DOE works in concert with industry to identify barriers to the effective execution of its objectives: risk reduction and the successful planning, construction and operation of large, often first-of-a-kind projects and facilities. Although DOE has made improvements, more progress can be made by encouraging robust competition from qualified firms through a transparent process that provides an appropriate balance of risk and reward and aligns contractor and taxpayer interests. The lessons learned from this engagement should be applied to future procurement projects so that the Department can safely and reliably meet its commitments.

Testimony of April Snell, Executive Director, Oregon Water Resources Congress
Submitted to the United States House Appropriations
Subcommittee on Interior, Environment, and Related Agencies
March 23, 2016

RE: U.S. Department of the Interior's FY17 Budget for the Bureau of Reclamation

The Oregon Water Resources Congress (OWRC) continues to support increased funding for the Bureau of Reclamation's (Reclamation) Water and Related Resources program and requests that a minimum of $1 billion be included in the FY17 Budget. OWRC would like to see an increase from the Administration's proposed $23.4 for the WaterSMART program to at least $40 million and we remain concerned that the proposed FY17 budget of $813.4 million for the Water and Related Resources program is woefully insufficient to meet the diverse water supply and infrastructure needs in the 17 Western States that Reclamation serves. Additional funding would help leverage other resources and collaborative partnerships through Reclamation's WaterSMART Initiative, as well as support increased coordination between other federal agencies on ecosystem restoration, climate change adaptation, and other water related challenges.

OWRC was established in 1912 as a trade association to support the protection of water rights and promote the wise stewardship of water resources statewide. OWRC members are local governmental entities, which include irrigation districts, water control districts, drainage districts, water improvement districts, and other agricultural water suppliers that deliver water to roughly 1/3 of all irrigated land in Oregon. These water stewards operate complex water management systems, including water supply reservoirs, canals, pipelines, and hydropower production. 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.

WaterSMART Initiative

OWRC strongly supports Reclamation's ongoing WaterSMART Initiative and increased funding for the WaterSMART Grants and Water Conservation Field Services Programs—the two programs used the most by Oregon's irrigation districts to support water conservation activities. These programs are an important part of the overall funding package for water resources 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' cooperative efforts with other stakeholders in their respective river basins to address in-stream, water quality, and water supply needs of their basins, without reducing the amount of land to which the districts deliver water, and avoiding regulatory actions by Federal or State agencies. There continues to be more applicants than available funding and additional financial resources are 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 surpasses 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.

- ***Santiam Water Control District, Irrigation System SCADA Automation and Water Measurement Improvement Project-*** The Santiam Water Control District, near Salem, Oregon, will automate numerous manual control gate and diversion structures within the canal system, including the automation of the District's small hydropower plant. The improvements will also include new and improved water measurement capabilities. More precise deliveries are expected to result in annual water savings of 2,150 acre-feet. **Reclamation Funding: $300,000 Total Project Cost: $941,700**
- ***Klamath Irrigation District, Stukel Spill Project*** – The Klamath Irrigation District in Klamath Falls, Oregon will design and construct a large capacity operational spill structure near the Stukel pump site. The spill will consist of a concrete intake structure and electric actuated roller gate, and a pipe discharge with measuring devise and supervisory control and data acquisition intertie, which will discharge to Lost River. The project will provide for better management of water deliveries which will result in the reduction of diversions from Upper Klamath Lake. **Reclamation Funding: $80,535 Total Project Cost: $231,666**

- ***Three Sisters Irrigation District, Main Canal Pipeline and Micro Hydro Generation Project*** - The Three Sisters Irrigation District in Oregon will pipe 14,000 feet of the open Watson-McKenzie Main Canal. The project is expected to result in annual water savings of 1,900 acre feet that is currently being lost to seepage. A portion of the conserved water will be dedicated for instream flows to Whychus Creek in order to improve riparian habitat and benefit Bullhead Trout, Steelhead, Chinook and Sockeye Salmon, Oregon Spotted Frogs, willow flycatcher and yellow breasted chat. The District is working with the Deschutes River Conservancy to dedicated approximately 1,400 acre feet annually that will be conserved as a result of this project into a water right held by the State of Oregon. In addition, with completion of this project, pressurized water will eliminate electrical pumps on farm, which are using over 3 million kilowatt hours of electricity annually. The pressurized pipeline resulting from this project will also allow farmers who receive deliveries from the District to implement further improvements. As part of an existing partnership, the Natural Resources Conservation Service will provide assistance, as available, for those farmers to expedite coordinated water conservation improvements in the area. The project also includes the installation of 4 micro-hydro turbines, which have a combined energy capacity of 200 kilowatts. **Reclamation Funding: $1,000,000 Total Project Cost: $4,737,906**
- ***North Unit Irrigation District, Lateral 58-11 Piping Project*** - The North Unit Irrigation District in Madra, Oregon, will pipe two miles of the 58-11 open ditch lateral to address seepage losses. The project will also include installation of 8 pressurized deliveries to District landowners. The project is expected to result in annual water savings of 570 acre-feet. Through a partnership with the Deschutes River Conservancy, conserved water will be marketed to restore instream flows in a critical reach of the Crooked River. **Reclamation Funding: $704,478 Total Project Cost: $1,525,545**
- ***Tumalo Irrigation District, Piping of the Tumalo Feed Canal (Phase IV)*** - The Tumalo Irrigation District near Bend, Oregon, will complete Phase IV of the Tumalo Feed Canal Piping Project. Phase IV of the project includes piping 3,400 feet of remaining 6-mile open canal system, which is expected to result in annual water savings of 776 acre-feet currently being lost to seepage and evaporation. The conserved water will be dedicated to the State of Oregon for permanent instream flows for use in Tumalo Creek, Crescent Creek, and the Little Deschutes River. **Reclamation Funding: $704,478 Total Project Cost: $1,525,545**

Further innovative projects like the ones above could be developed and implemented in Oregon if more funding is made available through the WaterSMART Initiative. Additionally, OWRC would like to see the funding cap increased from $1 million to $5 million in areas where there are known endangered, threatened or vulnerable species. By increasing the funding cap, Reclamation would have the ability to fund projects aimed at improving species habitat at a higher level, allowing for these important projects to move forward.

Ecosystem Restoration

Additional funding to support collaborative ecosystem restoration efforts that align with the environmental aspects of Reclamation's mission is also important to OWRC and its members. 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 implement reasonable and prudent alternatives to mitigate impacts to Columbia-Snake river salmon and steelhead under the new Federal Columbia River Power

System Biological Opinion. 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.

Furthermore, funding for the ongoing efforts in the Deschutes Basin related to the development of the Deschutes Basin Habitat Conservation Plan (HCP) should be included in Reclamation's FY17 budget. Specifically, funding similar to that received by the Yakima River Basin Water Enhancement Project should be allocated to North Unit Irrigation District and Ochoco Irrigation District for continued work on development of the HCP and for implementation of conservation measures and monitoring the effects of the conservation measures developed under the HCP. This funding will help support ongoing efforts to improve water supplies to meet the myriad of agricultural and environmental needs that depend upon it. Financial support for these types of collaborative restoration efforts will lead to implementable, cost-effective water resources solutions that help reduce conflict and expensive litigation.

Climate Change Adaptation and Aging Infrastructure
OWRC is supportive of developing strategies to address potential climate change related impacts to water resources. It is imperative that the nation's water infrastructure is capable of handling more frequent and severe weather events, changes in precipitation/snowpack, and other climate related impacts to water resources. Reclamation needs additional funding to coordinate and leverage state, local and other federal resources to support necessary evaluations and improvements of water infrastructure in the 17 Western States related to potential climate change impacts. Many of the 824 dams and reservoirs that Reclamation manages (and associated delivery systems) were built 50 to 100 years ago and are already 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.

Providing funding to evaluate and improve water infrastructure in the face of climate change will ensure that Reclamation reservoirs and associated delivery systems can continue to provide essential water supplies used to grow food and other agricultural crops—a vital part of our local, state, and national economy, as well as ensuring food security. Reclamation's WaterSMART Basin Study program has proved to be an effective tool for analyzing the effects of climate change and drought and should be utilized more to address climate change. Past and future studies will prepare river basins throughout the 17 Western States for developing solutions to water shortages through conservation as well as building innovative new storage facilities, large and small.

We respectfully request the appropriation of at least $1 billion for Reclamation's Water and Related Resources program for FY17. Providing increased funding for the WaterSMART Initiative and other related programs is a wise investment that will yield benefits for our nation's economy, environment, and communities that depend on water resources. Thank you for the opportunity to provide testimony regarding the FY17 budget for the U.S Bureau of Reclamation.

Sincerely,
April Snell, Executive Director
Phone: 503-363-0121 Address: 795 Winter St. NE, Salem, OR 97301

OFFICIAL TESTIMONY OF
JEFFREY R. BENOIT
PRESIDENT AND CEO, RESTORE AMERICA'S ESTUARIES

PREPARED FOR

COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT,
AND RELATED AGENCIES
UNITED STATES HOUSE OF REPRESENTATIVES

ON

FISCAL YEAR 2017 APPROPRIATIONS
FOR THE ARMY CORPS OF ENGINEERS, CIVIL WORKS

March 15, 2016

Restore America's Estuaries is a nonpartisan, nonprofit organization that has been working since 1995 to restore our nation's greatest estuaries. Our mission is to restore and protect estuaries as essential resources for our nation. Restore America's Estuaries is an alliance of ten community-based coastal conservation organizations across the nation that protect and restore coastal and estuarine habitat. Our member organizations include: American Littoral Society, Chesapeake Bay Foundation, Coalition to Restore Coastal Louisiana, Save the Sound—a program of the Connecticut Fund for the Environment, Galveston Bay Foundation, North Carolina Coastal Federation, EarthCorps, Save the Bay—San Francisco Bay, Save the Bay—Narragansett Bay, and Tampa Bay Watch. Collectively, we represent over 250,000 members nationwide.

As you develop the Fiscal Year 2017 Energy and Water Development appropriations bill, Restore America's Estuaries and our members encourage you to provide funding at the following levels to the Army Corps of Engineers Civil Works for core programs that greatly support coastal community and ecosystem resilience and local economies:

- **$3 million for the Section 1135 Continuing Authorities Program**
  (Civil Works: Construction: Continuing Authorities Program: Section 1135 – Project Modification for the Improvement of the Environment)
- **$8 million for the Section 206 Continuing Authorities Program**
  (Civil Works: Construction: Continuing Authorities Program: Section 206 – Aquatic Ecosystem Restoration)
- **$1 million for the Estuary Restoration Act**
  (Civil Works: Estuary Restoration Act)

These investments strengthen and revitalize America's coastal communities by protecting and restoring habitat, improving local water quality, and enhancing resilience. Healthy coastlines protect communities from flood damage and extreme weather, improve commercial fisheries, safeguard vital infrastructure, and support tourism and recreational opportunities.

SECTION 1135: PROJECT MODIFICATION FOR IMPROVEMENT OF THE ENVIRONMENT

The Section 1135 Program supports partnerships with non-federal entities to modify existing Corps' infrastructure to reduce negative environmental impacts of Corps projects and restore the ecosystem or to conduct restoration in areas that have been degraded by Corps projects or activities. This program is integral in providing a holistic view of water resources projects within the context of their natural environment. For example, Section 1135 activities may include setting back levees, constructing fish passages at dams and locks, and restoring degraded habitat. These projects are critical to reversing the trend of degradation caused by water resources projects and improving the habitat quality for fish and wildlife that support local economies and recreational opportunities.

In Quincy, Massachusetts, a large area of coastal marsh had been lost due to disposal of dredge material from navigation projects in the early 20th century. The dredge disposal areas were later colonized by an invasive reed, resulting in a dramatically altered and degraded ecosystem. The Army Corps partnered with the town of Quincy to restore over thirty acres of marsh to its original condition. Because of these efforts, the invasive plants are gone, tidal flow has been restored, and the area has become both a thriving wildlife habitat and a public interpretive park where visitors can learn about the area's Native American history.

Restore America's Estuaries greatly appreciates the Committee's past support of the Section 1135 program and urges your continued support and funding for the program at **$3 million for Fiscal Year 2017**, level with Fiscal Year 2016 enacted funding.

SECTION 206: AQUATIC ECOSYSTEM RESTORATION

The Section 206 Aquatic Ecosystem Restoration program authorizes the Army Corps of Engineers to partner with non-federal sponsors to design and build projects that restore and enhance aquatic ecosystems to benefit fish and wildlife. Restoration activities may include dam removals to restore tidal influence and fish passage, coastal wetland restoration to improve resilience, invasive species control, and oyster reef construction, among others. The Aquatic Ecosystem Restoration Program executes restoration projects with the support of local communities that provide a minimum of 35 percent non-federal cost share, leveraging significant private resources to supplement the federal investment.

In North Carolina, the Army Corps of Engineers, under the Section 206 program, partnered with the State to carry out an extensive ecosystem restoration project at Roanoke Island Festival Park. The Festival Park site was plagued by coastal erosion that threatened fish and wildlife habitat and recreational opportunities. This highly successful project restored more than five acres of

estuarine habitat, including salt marsh, maritime forest, and oyster reef, resulting in a stabilized shoreline, increased biodiversity, and a resurgence of seagrass.

Although the Section 206 program is authorized at $50 million annually, the President's Fiscal Year 2017 budget includes only $500,000 for this critical program. We are encouraged by the Committee's past support for the Aquatic Ecosystem Restoration Program and ask that you **provide $8 million for Fiscal Year 2017**, level with Fiscal Year 2016 enacted funding.

ESTUARY RESTORATION ACT

Enacted in 2000 and reauthorized by the Water Resources Development Act (WRDA) of 2007, the Estuary Restoration Act (ERA) establishes a comprehensive, interagency program for the restoration of our nation's estuaries. In approving the ERA, Congress recognized the importance of a nationwide, strategic plan and multi-level partnerships for effectively addressing the problems plaguing our nation's estuaries.

The ERA institutionalized coastal habitat restoration as an integral part of Federal agencies that manage, regulate, or otherwise impact natural resources. The Act established an Interagency Habitat Restoration Council (Council) to develop a comprehensive national restoration strategy, which was completed in 2002, to oversee the selection and implementation of restoration projects. The Council is the principal coordination mechanism for federal government efforts and consists of representatives from the Army Corps of Engineers, National Oceanic and Atmospheric Administration (NOAA), U.S. Fish and Wildlife Service, Natural Resources Conservation Service, and the Environmental Protection Agency.

While the ERA, and specifically the Council, has great potential to strengthen interagency coordination of restoration and mobilize federal resources, the goals of the ERA, to date, have not been fulfilled. The program has been drastically underfunded and burdened by restrictive administrative requirements of the Corps, severely hampering efforts to restore estuaries across the nation. As of March 2013, only one project had been carried out to completion, and more than half of the projects approved by the Council had been terminated due to administrative issues with the Corps. Reasons cited for project termination include the requirement to sign a binding indemnification agreement, which many project partners are not willing or permitted to do, concerns over ownership of the land on which the project is carried out, and length of the process, which can take up to five years after initial project approval. By contrast, NOAA's Community-based Restoration Program completes an average of 100 projects per year, all of a similar size and scope as those approved under the ERA.

Restore America's Estuaries requests that the committee include report language strongly encouraging the Army Corps to consider programmatic changes in Fiscal Year 2017 to resolve identified challenges with the Corps' administration of the Estuary Restoration Act and to expedite implementation of projects previously selected for funding by the Estuary Restoration Act Council. We urge the committee to include the following **report language**:

The committee recognizes the importance of habitat restoration for protecting communities, recovering threatened and endangered species, and providing enhanced tourism and recreational opportunities. To expedite the recovery of our nation's coastal and estuarine habitat, we urge the Army Corps to implement the following recommendations: 1) survey the Corps' administrative requirements to identify actions that would streamline implementation and reduce overhead costs of restoration projects under the Estuary Restoration Act, and 2) examine the requirements of restoration programs administered by other Federal agencies, such as the Community-based Restoration Program of the National Oceanic and Atmospheric Administration and the North American Wetlands Conservation Act grant program of the United States Fish and Wildlife Service to provide guidance on the structure and administration of partnership agreements under the Estuary Restoration Act.

To support the Corps' efforts to address programmatic changes to the Estuary Restoration Act program, we request that the Committee **provide $1 million in Fiscal Year 2017**.

CONCLUSION

Restore America's Estuaries greatly appreciates the support this Subcommittee has provided in the past for these important programs. These three core authorities each uniquely contribute to the Corps' ecosystem restoration efforts and help to restore river, wetland and estuary habitat. Restoration projects funded through these programs fuel the economies of coastal and river communities by supporting fish and shellfish industries and enhancing tourism. They also reduce regulatory burdens by providing habitat for threatened and endangered species. Lastly, the non-federal cost-share requirements for these programs offer the opportunity to leverage scarce federal funds with state, local and private resources.

We greatly appreciate you taking our requests into consideration as you move forward in the Fiscal Year 2017 appropriations process. We stand ready to work with you and your staff to ensure the health of our nation's estuaries and coasts.

Mr. Todd Gates, Treasurer
Seneca Nation
Written Testimony on Fiscal Year 2017 Appropriations
House Appropriations Committee
Subcommittee on Energy and Water Development
March 15, 2016

On behalf of the Seneca Nation ("Nation"), a federally-recognized, self-governing Native Nation located within its aboriginal territory in the State of New York, I respectfully request your support for a $2.7 million increase for the West Valley Demonstration Project ("WVDP") under the Department of Energy ("DOE") in the FY 2017 budget request as proposed by President Obama.

The Nation consists of more than 8,000 enrolled members, many of whom reside on three territories (Cattaraugus, Allegany, and Oil Spring) and additional territories in Erie, Cattaraugus, and Niagara Counties in New York. Our lands were reserved to us in treaties with the United States specifically for the purpose of making a permanent and viable homeland for the members of the Nation. As such, our lands are finite and our natural resources, which would otherwise be abundant in adjacent communities, are potentially scarce or threatened within our territories. The health and existence of resources like native plants, trees, fish and wildlife, water and air, are all critical to supporting our traditional dependency and survival. As such, we have a vested interest in protecting our lands and the members who live on or near them, and ensuring that our lands exist for future generations.

The Nation's Cattaraugus Territory is located approximately 20 miles downstream of the Western New York Nuclear Service Center ("WNNYSC"), a former commercial nuclear fuel reprocessing plant located in Ashford, NY in northern Cattaraugus County. From 1966 through 1972, the WNYNSC processed 640 metric tons of spent reactor fuel, generating over 600,000 gallons of liquid high-level radioactive waste ("HLW").[1] In 1980, Congress passed Public Law 96-368, *the West Valley Demonstration Project Act*, which created the WVDP for the purpose of cleaning up the WNYNSC and authorized the DOE to demonstrate a method for solidifying the HLW at the WNYNSC ("HLW vitrification"). Since 2002, when the Nation first started receiving funds from the DOE and the WVDP, the DOE has been working to decommission WVDP through the decontamination and dismantling of the facilities and the management and disposal of the waste. The WVDP crew has successfully deactivated portions of the plant, including over 70 contaminated rooms and over 80 tanks. Demolition for the site is expected in 2019-2020. However, the process has been taking longer than initially believed and the Nation remains concerned that any further delays and setbacks to a timely clean-up of the site may cause further harm to Nation lands and resources. As a result, the Nation works closely with the WVDP Task Force, as well as the DOE and the Nuclear Regulatory Commission ("NRC") to address these and other issues at the WVDP.

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[1] West Valley Demonstration Project Annual Site Environmental Report for Calendar Year 2011, prepared by CH2M Hill – B&W West Valley, LLC (September 2012) ("CY2011 Report").

Treasurer Todd Gates
Seneca Nation
Written Testimony - FY 2017 Appropriations

In FY 2016, the Nation received approximately $110,000 of the $60 million appropriated to the WVDP. This represented a $30,000 increase for the Nation after funding had remained stagnant at $80,000 for the previous five (5) fiscal years. This amount is used to support the Nation's own Environmental Protection Department ("EPD") and related employee salaries, including a Water Quality Program Manager, Database Developer, and a consultant. The Nation's Database Developer is responsible for maintaining and updating traditional plant and medicine inventory specific to cultural identification and natural damages that would be lost in the event of contamination related to WVDP radionuclides or a disaster scenario of waste shipments transported through the Nation's lands. A consultant was engaged to perform a radionuclide survey of Cattaraugus Creek and to conduct an erosion study. Overall, the Nation's EPD staff performs with very minimal financial resources yet still fulfills their task-based projects. Funding is not currently available to enable EPD to perform critical continual, proper, and comprehensive environmental monitoring of Cattaraugus Creek. WVDP funding through the DOE has, however, enabled the Nation's EPD to conduct *seasonal* water testing, create a multi-seasonal inventory of cultural and natural resources, purchase equipment, identify cultural resources located directly within waste travel routes, and provide training on potential emergency response to the contamination of Nation lands.

We understand that a $2.7 million increase for the WVDP in FY 2017 to a total of $63 million would primarily address the need for relocation of the site's electrical service as preparation continues for the demolition of the Main Plant Process Building. We remain hopeful that it would also enable the Nation to address its own WVDP concerns, such as the need for environmental monitoring of Cattaraugus Creek – an ongoing process due to the decommissioning of the WVDP and in-place closures, and additional phases of the erosion study. An increase in FY 2017 funding for the WVDP would further alleviate some of the strain on the Nation's own budget, since only a portion of WVDP-related activities are subsidized by funding from the federal government.

Additional funding would also promote a quicker and more effective clean-up of the site by enabling facility deactivation and the ability to address critical infrastructure needs, which would reduce delays and setbacks and ultimately reduce harm to Nation lands and resources. However, more funding is necessary to address critical infrastructure needs, such as work on the lagoons, repair of storm damage to the dam spillway, and repair/maintenance of the rail spur. Recent funding, even with the proposed FY 2017 increase, has been unduly limited and has not kept pace with critical onsite infrastructure that is in need of repair.

Furthermore, the Nation remains concerned that the U.S. Army Corps of Engineers' (USACE) near-future plan to remove the Scoby "Springville" Dam may increase the potential for release of additional sediment with radionuclide activity. Recent aerial radiological sampling showed several hotspots on Nation territory. As a result, EPD will require additional funding through the WVDP to conduct continual comprehensive environmental monitoring and assess long range natural resource damage.

We are pleased to report to the Subcommittee that the Nation works closely with the WVDP Task Force, as well as the DOE and the NRC, to address these and other issues at the WVDP. The relationship among the interested parties is the best it has been in years. In fact, there has been better community awareness through the media and social networking. As such, we look forward to continuing this positive relationship with all interested parties.

In closing, we must remind the Subcommittee that the United States assured the Seneca Nation "free use and enjoyment" of its lands, including its cultural and natural resources, under both the Canandaigua Treaty of 1794 (the "Pickering Treaty")[2] and the Buffalo Creek Treaty of 1842.[3] We respectfully request that the Subcommittee uphold those assurances by including the increase for the WVDP under the DOE in the FY 2017 Energy & Water Development appropriations bill as proposed by President Obama and consider additional increases.

Thank you for your consideration of this request and for allowing us to submit this written testimony. Please contact me directly at (716) 532-4900 if you have any questions or require additional information regarding the Seneca Nation or the West Valley Demonstration Project Citizens Task Force.

Nya:weh (thank you).

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[2] *See* Article 2, Treaty with the Six Nations, 1794 (Treaty of Canandaigua), 7 Stat. 44 (November 11, 1794).

[3] *See* Treaty with the Seneca Nation (Buffalo Creek Compromise Treaty), 7 Stat. 586 (May 20, 1842) ("shall and may continue in the occupation and enjoyment").

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Official Written Testimony for Fiscal Year 2017

Submitted by: Dr. Pam Cook
President, Society for Industrial and Applied Mathematics (SIAM)
&
Dr. C. 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 2017 Appropriations

March 15, 2016

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) 2017 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 through the Computational Sciences Graduate Fellowship.

Written Testimony

We are Dr. Pam Cook, 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 2017 and beyond. In particular, ***we request that you provide the Office of Science with the budget request level of $5.67 billion in funding for FY 2017***. SIAM recognizes the challenging fiscal situation; however, we also face an "innovation deficit," the widening gap between the actual level of federal government funding for research and what the investment needs to be if the U.S. is to remain the world's innovation leader. Federal investments in mathematics, science, and engineering remain crucial as they power innovation and economic growth 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.

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.

Applied mathematics and computational science play a key role in predictive modeling and analysis to understand complex systems. Already, mathematical and computing researchers using these tools have made substantial progress in improving our understanding across fields such as genomics, biofuels, materials fabrication, and nuclear security. Extreme-scale computing, or exascale, will allow predictive modeling and simulation of complex systems far more comprehensively and accurately than is possible today. While achieving exascale computing has the potential to allow for revolutionary advances in many fields critical to solving our energy challenges, getting to exascale and realizing its benefits requires overcoming significant computing challenges, including in applied mathematics.

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Department of Energy Office of Science

Activities within the Office of Advanced Scientific Computing Research (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. For FY 2017, we ask that you provide the President's budget request of $663.2 million for ASCR.

We also urge the Committee to continue to support ASCR Mathematical, Computational, and Computer Sciences Research at the budget request level of $150.8 million to enable development of critical tools for computational science and analysis of ever-growing data volumes on existing and future computing platforms. The explosion in data available to scientists from advances in experimental equipment, simulation techniques, and computer power is well known, and applied mathematics has an important role to play in developing the methods and tools to translate this shower of numbers into new knowledge. In addition, new funding proposed for SciDAC will support key partnerships with other DOE offices to ensure that new computational and data analysis tools are available to tackle key energy challenges.

SIAM supports the Administration's proposal to establish the Office of Science Exascale Computing Project (SC-ECP) and to provide it with $154 million in FY 2017. SC-ECP would further advance ASCR's all-in approach to exascale computing by centralizing office-wide exascale activities under one program and allowing for more efficient coordination with the government-wide National Strategic Computing Initiative (NSCI). SIAM notes that SC-ECP should continue to facilitate investments in mathematical modeling, algorithm research, and software development in order to realize the full benefits of this next generation of high performance computers and to transfer their capabilities to industry for broad economic benefit.

In addition to the critical research within ASCR, SIAM endorses the Administration's proposal to provide $12 million for Computational Materials Sciences within the Office of Basic Energy Sciences (BES). This initiative brings together computational approaches with experimental research to improve our ability to design new materials with key properties for energy uses.

SIAM also supports the Administration's proposal to provide $13.6 million for a new Computational Chemical Sciences program within BES. This program would support the development of new open-source modular software tools that are optimized for the arrival of exascale computing. It would also leverage the capabilities of the Leadership Computing Facilities to develop new quantum chemical codes to model, simulate, and solve complex problems in chemistry.

Supporting the Pipeline of Mathematicians and Scientists

SIAM is grateful to Congress for funding the Computational Sciences Graduate Fellowships (CSGF) in FY 2016 and supports the Administration's proposal to provide $10 million in FY 2017

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for this critical program that maintains the pipeline of the mathematical workforce. Researchers trained in computational science and working in universities, national laboratories, and industry are central to DOE's mission and essential to propel advances in DOE mission-critical fields such as nanotechnology, biofuels, genomics, and materials fabrication. CSGF helps ensure the existence of an adequate supply of scientists and engineers with strong computational research experience and close ongoing ties to DOE to meet future national workforce needs. ***We urge Congress to provide the President's budget request of $10 million for CSGF in FY 2017.***

The CSGF has a long history of success at DOE. Connections to the national labs are integral to CSGF's success, as fellows train at DOE national labs and program requirements are closely tied to DOE mission needs. A 2011 Committee of Visitors (COV) report[1] evaluating CSGF found that the program has been highly successful at producing alumni with strong computational research experience and close ongoing ties to DOE. CSGF is a valuable program and a unique source of talent in the area of computational science where high performance computing is applied to challenging and important science and engineering problems.

Conclusion

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

We would like to conclude by thanking you again for your ongoing support of the DOE Office of Science and the actions you have already taken to enable DOE and the research and education communities it supports, including thousands of SIAM members, to undertake the activities that contribute to the health, security, and economic strength of the 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 2017 appropriations process.

[1] http://science.energy.gov/~/media/ascr/ascac/pdf/reports/ASCAC_CSGF_Report_2011-Final.pdf

My name is Rob Rash, P.E., PLS and CEO of the St. Francis Levee District of Arkansas with the Board of Directors representing the St. Francis Basin and the Mississippi Valley Flood Control Association as a Regional Professional Engineer along with hundreds of partners and thousands of people that live along the magical Mississippi River and enjoy protection and the productivity of the world envied Commerce and Flood Control System. The Mississippi Valley Flood Control Association (MVFCA) requests FY17 Mississippi River and Tributaries (MR&T) Appropriations in the amount of $500 million per year and an infrastructure re-investment amount of $2 billion following the 2015 Record setting Christmas Flood. We remind you and our nation of the MR&T's exceptional system performance in 2008, 2011, 2012 (drought), and the 2015 Floods AND the other high and low water events for 88 years. The investment by the MR&T system in preparation for the 2011 flood ... resulted in more than $246 billion worth of damages prevented by the MR&T system ... a return on federal investment of over 46 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 low water experienced throughout the Mississippi River in 2012-2013.

We thank Congress for the support and funding you have provided in the past. This funding reveals your awareness of the importance of flood control projects throughout the Mississippi River Valley and the value and unmatched economic and social benefits it provides this great Nation.

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 great nation. After that devastating event Congress wisely passed a bill and established the Mississippi River and Tributaries Project and authorized the U.S. Army Corps of Engineers along with the local people 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, high return, and much needed national investment. To date the MR&T Project has prevented flood damages and provided other benefits resulting in a current benefit/cost ratio of over $46 to $1. The MR&T is a wise investment for our nation. Countless lives have been spared due to the construction of this great system and our nation receives three billion dollars of transportation rate savings each year largely due to the current reliability of a navigation channel afforded by the MR&T system.

The MR&T project had merit from its beginning and continues to reward the citizens of the valley and 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 ... because it serves as a defendable INNER Coast and an artery to transport large equipment and supplies. This project must be targeted for swift completion, proper maintenance and increased investment for recapitalization. The MR&T serves as an example of federal and local partnership and investment for our great nation ... in the past, and for our future! I challenge you to find any other project of any nature which approaches the benefits current and long term of this comprehensive flood control system.

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 a calamitous natural disaster like the 1927 flood. That devastating event 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 from excessive rainfall.

At a time when we must stimulate our economy, at a time that safety from terrorist activities must be enhanced and at a time that many in our nation are concerned about cleaner air and water ... we have an opportunity to meet those needs. We must make sound re-investments in 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 (the system provides an inner coast unexposed to arrival by sea). Local interests have delivered their part in providing rights of way, roads, utilities and minor maintenance. Our government must re-invest to help fulfill the federal obligation and bring it to completion as quickly as possible.

We believe the Corps could effectively deliver (with the direction of congress) $500 million each year (as a baseline) for maintenance and construction within the MR&T. We respectively request Congress approve this level of reliable and efficient funding for maintenance and construction for the MR&T. The MR&T improvements described are for Flood Control. However, these benefits were also realized during the low flow event 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 2012-2013. If it were not for the MR&T system improvements barge traffic during the low water event would have been nonexistent.

The Mississippi Valley Flood Control Association requests:

- that Congress support the Upper Mississippi River Comprehensive Plan (UMRCP). The impact of the flood of 1993 on the Upper Mississippi was devastating leaving $15 Billion in damages, loss of life and damage to 72,000 homes. In 2008 the Upper Mississippi was again ravaged by catastrophic flooding and again in 2011 flooding costs top $360 Million in infrastructure damage. The Upper Mississippi River Comprehensive Plan's system approach to Flood Control and the Mississippi River and Tributaries Project must be funded and promptly executed for protection of the entire Mississippi River Valley.
- that the Congress increase support and a more systematic approach for the Authorization and Appropriations of dredging for MR&T and Non-MR&T Ports and Harbors. Flood Control and

Navigation interests go hand in hand and you cannot have efficient commerce movement and delivery without a reliable system during critical business seasons. Flood Control and Navigation are symbiotic.

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 and a vibrant economy must have the reliability for production and exports. 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 protection for people, land and the economy we believe that four things are critical as we take action as a nation:

- Environmental laws, regulations and executive orders, or at least the way they are interpreted for flood control projects, must be streamlined or changed or we stand to lose more lives and have another environmental challenge such as the one we experienced in New Orleans and along the Gulf Coast during Hurricanes Katrina and Rita in 2005.
- Reconsider cost-sharing for flood control projects unless intend to only protect those that can afford it and neglect those that cannot.
- Relax or re-engineer the formula to include ALL THE BENEFITS for the requirements for the benefit to cost ratio for flood control projects. And as a reminder ... it is not possible to assign a dollar value to saving a human life.
- Invest in infrastructure throughout the Mississippi River watershed. The United States has the largest inland waterway navigation/commerce system in the world. This water commerce system is positioned in the center of the country and the infrastructure is the envy of the people along the greatest rivers around the globe. This system keeps us competitive with exports and in the world market and must be properly maintained and operated. These things must be done ... without flood control, nothing else matters.

We provide a simple reminder. The MR&T system is not complete and will not pass the Project Design Flood, and the system has been stressed with recent record flooding (Christmas 2015-2016)!

Thank you for your leadership and the reality that you have helped prevent $100's of billions of dollars in damages because you supported and funded the greatest civil works project on the planet ... the MR&T!

MVFCA: Facts, Issues, Challenges, and Opportunities

Thank you for understanding the nations needs and the importance of the MR&T system by not allowing FEMA to charge mandatory flood insurance (SEC. 107. MANDATORY COVERAGE AREAS)

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 14 billion dollars today. Making the total federal and local investment in the MR&T system 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 recommendations from the National Levee Safety Committee, if used, force unachievable maintenance standards and predatory flood plain management tactics. This will needlessly destroy economic development for over 22,000,000 acres of land in this country. Please do not use a "one size fits all" approach and place false fear in the minds of people living behind levees. We can inform without fear! These flood insurance premiums, because of the support of Congress, the hard work of the U.S. Army Corps of Engineers and local levee and drainage districts across this country, are not necessary but do create a nice funding mechanism for future disasters.

On January 30, 2015 Executive Order 13690 amended the Federal Flood Risk Management Standard (FFRMS) and ultimately forces people from their homes. Congress stopped an attempt by FEMA to force similar measures through the National Flood Insurance Program. The FFRMS was developed without meaningful public input by a coalition of federal agencies formally known as the Mitigation Framework Leadership Group which was established in 2013 in response to Hurricane Sandy rebuilding efforts and the Presidential Policy Directive / PPD-8: National Preparedness dated March 30, 2011. This group worked behind closed doors toward establishment of a standard that increases the vertical elevation and corresponding horizontal extent of the areas protected by levees.

The effects of the FFRMS will be devastating for over 40% of the United States population in areas declared floodplains by these standards in coordination with the unachievable levee standards set forth by the National Levee Safety Committee.

The EPA Waters of the United States "rules clarification" (WOTUS) will make it virtually impossible to inhabit areas protected by levees. WOTUS further undermines the Congressional intent of the Clean Water Act and in the words of many local people "will make every pothole in a city street that holds water regulated by the EPA". This appears to be an attempt by the EPA to overstep their authorities and pervert the original intent of the Clean Water Act. Please do not allow the Federal Bureaucracies to negate the hundreds of years of work done by the local people, state and federal agencies and the United States Congress to provide the best Flood Control and Navigation System in the world.

STATEMENT BY

INDUSTRY MEMBERS OF THE U.S. COALITION FOR THE ADVACEMENT OF SUPERCOMPUTING (USCAS)

BEFORE THE HOUSE APPROPRIATIONS COMMITTEE

ENERGY AND WATER SUBCOMMITTEE

March 16, 2016

Chairman Simpson, Ranking Member Kaptur, and Members of the Energy and Water Development Appropriations Subcommittee, thank you for allowing Industry Members of the U.S. Coalition for the Advancement of Supercomputing (USCAS) to submit this written statement advocating for full funding of the Department of Energy's fiscal year 2017 budget request for supercomputing.

Industry Members of the U.S. Coalition for the Advancement of Supercomputing (USCAS) include the following organizations which collectively lead the world in supercomputing technology: Advanced Micro Devices, Battelle Memorial Institute, Cray Inc., Hewlett Packard Enterprise, IBM, Intel, Micron Technology, Inc., Nvidia, Reservoir Labs, SAIC, Seagate, and the Semiconductor Industry Association.

We have come together to lend a single voice and focus to the national bipartisan initiative to develop the next generation of supercomputing technology, that like previous generations of supercomputing have done already, will lead to unprecedented discovery and innovative solutions for the government, the scientific community, and industry. Super-computing is the bedrock of our national effort to maintain America's competitive edge in the transformative research and development that fuels U.S. innovation and propels economic growth. The Department of Energy has a leadership role in this effort. We are testifying today to tell you that what the Department is doing in terms of its supercomputing initiatives is critical, thoughtful, helpful, and productive to the demands of our national security, prosperity and global economic competitiveness. The Industry Members of the Coalition strongly urge the Subcommittee to provide the full amount requested by the Department of Energy in its fiscal year 2017 budget request to Congress for supercomputing programs, which are in budget lines

called Advanced Scientific Computing Research in the Office of Science and Advanced Simulation and Computing in the National Nuclear Security Administration.

U.S. leadership in advanced computing is increasingly challenged from abroad. China, Japan, Russia and the European Union are making substantial investments. And the stakes are huge. The countries that are first in scientific discoveries reap large economic benefits ranging from better manufacturing, rapid prototyping, faster product commercialization as well as spin-offs in computer systems, software and information technology. Virtually every sector of our society has become dependent on the continued growth in computing performance to advance science and technology, drive industrial productivity, increase efficiency, and enable innovation.

Last July, the President issued an executive order to form the National Strategic Computing Initiative (NSCI) across federal agencies whose main purpose is to focus on achieving within the next ten years a paradigm-shifting breakthrough in high performance computing which restores U.S. global superiority in supercomputing. NSCI was intended to drive collaborations across the efforts of the National Science Foundation, the National Institute of Standards and Technology, the Department of Energy, the Department of Defense, and the Intelligence Community to lift the capabilities in "all of government" through more effective public-private partnerships by growing the capabilities and deployments of supercomputing. The largest effort within the NSCI is the Exascale computing initiative, which envisions fielding future computing systems capable of a billion billion calculations per second (significantly more capable than our most advanced petascale computers in existence today), paired with the ability to store, analyze and process unprecedented volumes of data and development of advanced software and algorithms optimized for solving strategic problems.

Since the beginning of the digital era, the U.S. Government has made pivotal investments in the high performance computing industry at critical times when market progress was stagnating. Our nation is once again at a critical turning point in computing technology, with industry innovations in hardware and software architectures driving advances in computing performance for mobile phones, laptops and servers, but where these advances are slowing down for supercomputing. Yet, the importance of high performance computing simulations and big data analytics is rapidly increasing as the U.S. faces serious and urgent economic, environmental, and national security challenges based on dynamic changes in the energy and climate systems, as well as growing national security threats. Committed U.S. leadership toward supercomputing, including Exascale computing, will be a critical contributor to our nation's competitiveness in science, national defense, cybersecurity, and energy innovation.

The Department of Energy's fiscal year 2017 budget requests well-justified 13 percent growth over the fiscal year 2016 appropriated level for the Exascale Computing Initiative and importantly a new budget line entitled "Exascale Computing Program" within the Office of Science funded at $154 million. This is intended to introduce more rigor into the Exascale initiative by using long-standing and highly successful management processes that DOE has used in the past when developing complex, emerging new technologies such as advanced photon sources, spallation neutron sources, or heavy ion accelerators. The processes include detailed work breakdown structures, reviews, and delivery checks. The Department of Energy's fiscal year 2017 budget request for Exascale is organized around four pillars: application development, software technology, hardware technology, and Exascale systems. DOE plans to expand its efforts in the first three pillars in fiscal year 2017, so that it can begin on the critical fourth pillar beginning in fiscal year 2018.

Within the Office of Science, funding for Exascale totals $190 million, to include another $26 million in Basic Energy Sciences and $10 million in Biological and Environmental Research. When coupled with the $95 million requested by the National Nuclear Security Administration, the Department of Energy's total request for the Exascale Computing Initiative is $285 million in fiscal year 2017.

The Industry Members of the U.S. Coalition for the Advancement of Supercomputing strongly urge your Subcommittee to fully support the Administration's full fiscal year 2017 budget request for the Exascale Computing Initiative of $285 million in the Department of Energy. We appreciate the opportunity to provide our perspectives on this very important funding in your bill. Thank you.

Statement of Bruce Cook
Chief Engineer
Board of Commissioners for the Yazoo-MS Delta Levee District
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 2017

March 15, 2016

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

This statement is prepared by Bruce Cook, Chief Engineer for the Board of Commissioners for the Yazoo-MS Delta Levee District, Clarksdale, Mississippi, and submitted on behalf of the Board and the citizens of the Levee District. The Board of Commissioners for the Yazoo-MS Delta Levee District is comprised of 12 elected commissioners representing the counties of Tunica, Coahoma, Quitman, Leflore, Sunflower and parts of Humphreys, Holmes, Desoto, Tallahatchie and Yazoo counties in the Lower Yazoo Basin in Mississippi. The Board of Commissioners for the Yazoo-MS Delta Levee District 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 Yazoo-Mississippi Delta Levee District. **The Yazoo-MS Delta Levee Board and the Mississippi Valley Flood Control Association support an appropriation of $500 Million for FY 2017 for the Mississippi River & Tributaries Project and an infrastructure re-investment amount of $2 billion following the 2015 record setting Christmas flood.** 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.

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. The Mississippi River & Tributaries Project is one of, if not the most cost effective projects ever undertaken by the United States government. The foresight of the Congress in their authorization of the many features of this project is exemplary.

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 $262 Billion in damages in 2011 alone. All together since 1928,

Congress has invested $14 Billion in the MR&T Project and it has prevented $644 Billion in damages! This is a 46:1 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 than 2011 when we have the Project Design Flood. 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.

For the past few years the President's Budget has not included funding for any construction projects within the Yazoo Basin. 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 cannot 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 Upper Yazoo Project has received no funding in the President's FY 2017 Budget. The project provides much needed flood protection by decreasing flood stages up to 3 feet in most areas. The project began in 1976 near Yazoo City and had advanced to near Sidon, Mississippi before the project was reformulated in 1994. Reformulation resulted in approximately 130.3 miles of channel enlargement in nine segments from Sidon to Darling, Mississippi. The project focuses on cleaning out and restoring channel capacity to the Yazoo River and its tributaries. Absence of funding will delay remaining flood control and economic benefits to the area by not allowing the initiation of any new construction items. Currently there are 29,000 people protected in the 100-year flood plain. Funds in the amount of $11,050,000 could be used for Engineering and Design (E&D) of items 7D ($1,750,000), E&D of structures in Item 7 ($300,000), study, design, and initiate construction of a floodwater management structure in the vicinity of Chute Bridge ($2,000,000), and complete design, surveys, and real estate activities and initiate construction on portions of Item 7C and 7D ($7,000,000).

The Delta Headwaters Project is another construction project within the Yazoo Basin that has received no funding in the President's FY 2017 Budget. The project is vital to the ongoing erosion prevention in the 16 authorized watersheds. Completing the much needed work will reduce the risk of flooding in the Yazoo Basin. The project will also reduce the sediment deposited in downstream reservoirs and streams, reduce the need for maintenance dredging, and improve degradation of wildlife habitat in and along the streams. FY 2017 funds in the amount of $12,550,000 could be used to fully fund three bank stabilization contracts ($5,500,000); four riser pipe contracts ($5,050,000); and one low drop structure contract ($2,000,000).

We are requesting more money for Maintenance of the Mainline Mississippi River Levees and Yazoo Backwater 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.

Upper Mississippi River Comprehensive Plan (UMRCP) – We support and ask Congress to support the Upper Mississippi River Comprehensive Plan. The impact of the flood of 1993 on the Upper Mississippi was devastating leaving $15 Billion in damages, loss of life

and damage of 72,000 homes. In 2008 the Upper Mississippi was again ravaged by catastrophic flooding and again in 2011 when Infrastructure damages rose to $360 Million. The Upper Mississippi River Comprehensive Plan's system approach to flood control and the Mississippi River and Tributaries Project must be funded and promptly executed for protection of the entire Mississippi River Valley.

Dredging for MR&T and Non-MR&T Ports and Harbors – We ask Congress to increase support and utilize a more systematic approach for the Authorization and Appropriations of dredging for MR&T and Non-MR&T Ports and Harbors. Flood Control and Navigation interest go hand in hand and you cannot have efficient commerce movement and delivery without a reliable system during critical business seasons. Flood Control and Navigation are symbiotic.

National Levee Safety Committee – The recommendations from the National Levee Safety Committee, if used, force unachievable maintenance standards and predatory flood plain management tactics. This will needlessly destroy economic development for over 22,000,000 acres of land in this country. Please do not use a "one size fits all" approach and place false fear in the minds of people living behind levees. We can inform without fear! These flood insurance premiums, because of the support of Congress, the hard work of the U.S. Army Corps of Engineers and local levee and drainage districts across this country, are not necessary but do create a nice funding mechanism for future disasters.

Waters of the United States (WOTUS) - The Environmental Protection Agency (EPA) has introduced its Proposed Rule and it is a significant expansion of the Clean Water Act (CWA) that will affect every American, and have a significant impact on my community due to the proposed increased jurisdiction over all waters. The definitions provided in the Proposed Rule are very broad and do not provide clarity to which waters could be considered "waters of the United States" under CWA jurisdiction. Under current CWA section 404(a), any person engaging in activities that result in the "discharge of dredged or fill material into navigable waters" must obtain a permit from the Corps of Engineers (Corps). The term "navigable waters" is defined broadly by statute to mean "waters of the United States." The Proposed Rule uses terms such as "adjacent", "neighboring", and "tributary" to expand the CWA reach to ditches, ephemeral ditches, ponds and other waters that are too small, too far removed, with too speculative and insubstantial an effect on traditionally navigable waters, to allow any meaningful connection to navigability. The Proposed Rule would make the very drainage ditches considered in Rapanos vs. United States jurisdictional when the U.S. Supreme Court ruled that they were not! Furthermore, the majority of the U.S. House of Representatives and the U.S. Senate object to the Proposed Rule which would expand CWA jurisdiction. On May 1, 2014 a bipartisan group of 231 Members of Congress wrote EPA and the Corps a request "that this rule be withdrawn." On May 14, 2014 52 Senators voted in favor of an amendment to prohibit the EPA and Corps from implementing the Proposed Rule's guidance and from using it. On September 9, 2014 the House passed (262-152) H.R. 5078, the Waters of the United States Regulatory Overreach Protection Act of 2014, a bipartisan bill to prohibit the EPA and Corps from finalizing the Proposed Rule. **The EPA and the Corps should withdraw its Proposed Rule and keep "navigable" as the defining term for "waters of the U.S." under CWA jurisdiction.**

Federal Flood Risk Management Standard (FFRMS) - FFRMS originated in 2011 with President Barack Obama's March 30, 2011 issuance of Presidential Policy Directive - PPD-8 - National Preparedness. FFRMS seeks to improve flood risk management by directing agencies to "update" their flood-risk reduction standards for all federally-funded projects. In April, 2013 the Hurricane Sandy Rebuilding Task Force called for minimum flood risk reduction standard and announced that all federally funded buildings projects needed to be 1' above the base flood elevation (BFE)(the 100-year flood). President Obama's Climate Action Plan - released in June, 2013 - directs agencies to incorporate the most recent science on expected rates of sea-level rise. FFRMS is looking at 3 options to establish revised Elevation and Flood Hazard Areas: (1) Climate-informed science approach (the "preferred" option); (2) Freeboard - BFE + 2' or BFE + 3' for critical infrastructure; or (3) the 500-year elevation. This process included no public involvement. They did not perform a benefit-cost analysis for "significant action". We believe FFRMS will affect PL84-99 (federal assistance to repair levees after being damaged) and will eventually affect Flood Insurance (FIRM). FEMA is trying to expand the floodplain vertically and horizontally. This will affect millions of Americans by forcing them to purchase flood insurance and it will discourage industry and businesses from locating to the Mississippi Delta. On December 16, 2014 President Obama signed into law the Consolidated and Further Continuing Appropriations Act, 2015 funding the federal agencies through the fiscal year. It included a provision to prohibit the use of funds to implement a new Federal Flood Risk Management Standard (FFRMS). Despite this provision on January 30, 2015 President Obama signed EO 13690! He is making laws without due process or the consent of Congress! **We need Congress to stop FFRMS!**

As members of the Congress representing the citizens of our Nation who live with the Mississippi River every day, 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 Yazoo-Mississippi Delta Levee Board, I cannot 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 2017.

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